WITH SUPPLEMENT.

NATIONAL CAR BUILDER

VOLUME XIV.
NUMBER 6.

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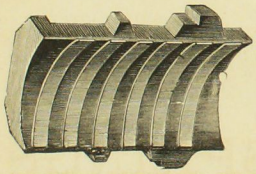

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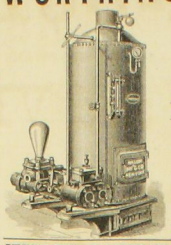

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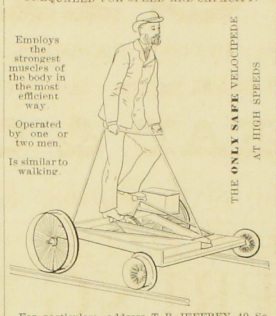

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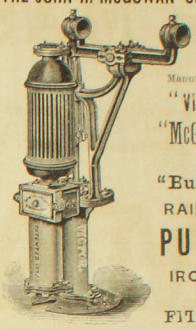

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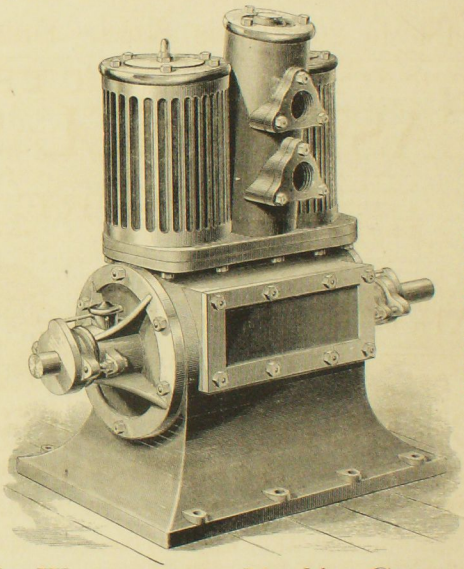

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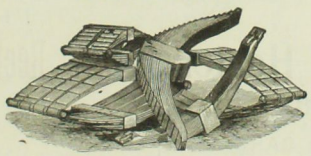
EXTRA TEMPERED,  LIGHT ELLIPTIC

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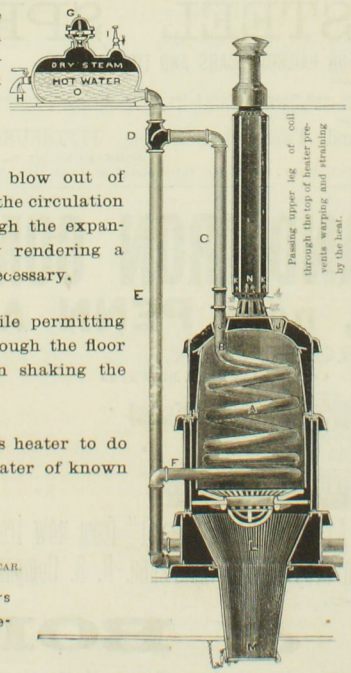

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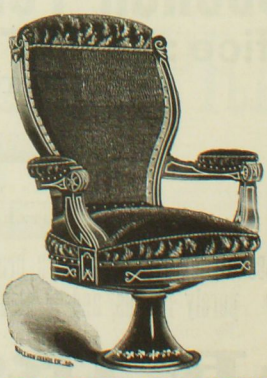

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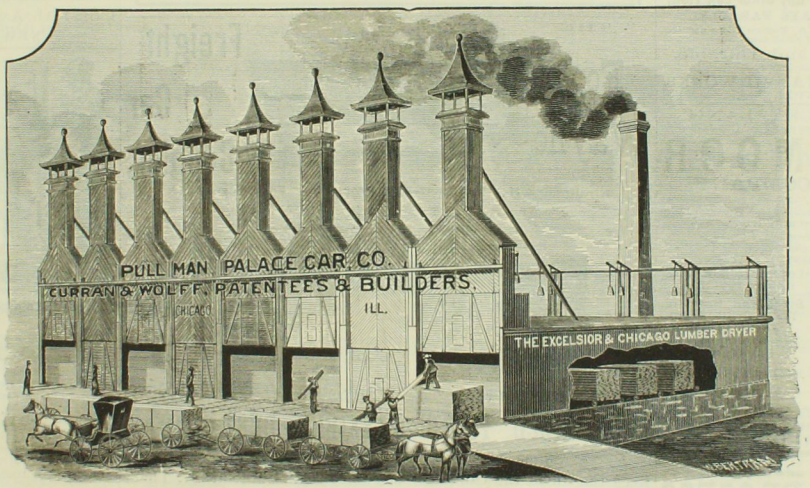

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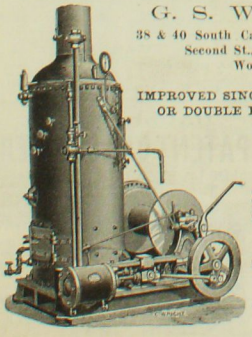

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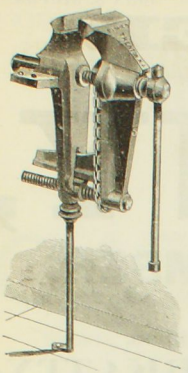

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REVERSED BLUE PROCESS

paper gives dark blue lines on a white background on first impression, instead of white lines on blue background, as in the ordinary blue process paper, thus making the *altering* of lines or the *coloring* of any part of the drawing perfectly simple and easy.
Prices: in rolls of 11 yards in length by 30 in. wide, $4; 36 in., $5; 43 in., $6 per roll.

DRAUGHTSMEN'S MATERIALS.
Solar Printing and Blue Process Paper,
White and Manilla Drawing Paper in Sheets, Rolls or Mounted.
Tracing Cloth, India Ink, Pencils, Colors, Tacks, Instruments, &c., &c.

CHAS. F. KETCHAM & CO.,
Railroad Printers and Stationers,
27 AND 29 NASSAU STREET, NEW YORK.

"Standard" Brake Shoe & Head.

Light, Strong, Simple, Durable.

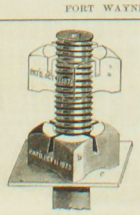
The Best and CHEAPEST In Use.

Both Head and Shoe quickly adjustible, the latter also easily reversible when required. All the corresponding parts of each thoroughly interchangeable.

Write for circular and Prices.

STANDARD BRAKE SHOE CO.,
FORT WAYNE, IND.

Atwood Safety Nut Co., Springfield, Mass.



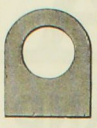
J. W. LARRABEE, Treasurer.

a, ATWOOD NUT on bolt with nut bearing on base—slots open.
b, ATWOOD NUT turned to bearing *c*, partially closing the slots and grasping the bolt.

MORSE TWIST DRILL AND MACHINE COMPANY

MANUFACTURES
Patent Twist Drills, Machine Bits for Wood, Bit Stock Drills, Reamers, Standard Gauges, Milling Cutter and Special Tools, for use in Railroad, Car and Locomotive Shops. **NEW BEDFORD, Mass.**

VULCANIZED FIBRE COMPANY,
SOLE MANUFACTURERS OF
HARD & FLEXIBLE VULCANIZED FIBRE.



Flexible Vulcanized Fibre Dust Guards and Oil-Box Covers,
being absolutely unaffected by oil or heat, are far more durable and efficient than Leather, and much cheaper.

Office and Works; Wilmington, Del.

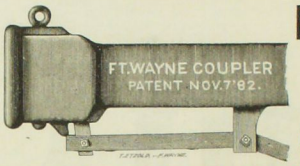
PINTSCH Safety, Economy, Brilliancy. **LIGHTING COMPANY,**

MOSCOW, 1872, Great Gold Medal. VIENNA, 1873, Progress Medal. ST. PETERSBURG, 1875, Gold Medal. CINCINNATI, 1881, Gold Medal.

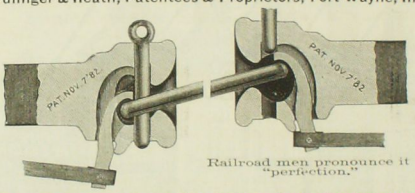
19 William Street, New York.

H. HOWARD, Pres. F. KUHNE, Treas. W. K. JEWETT, Sec'y.

THE
Fort Wayne Freight Car Coupler.



Nirdlinger & Heath, Patentees & Proprietors, Fort Wayne, Ind.



Railroad men pronounce it "perfection."

Only two (2) small pieces of iron, and two bolts, weighing but 13 pounds, used in its entire construction.

GELATINIZED FIBRE FLEXIBLE DUST-GUARDS.

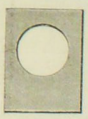
Superior to Leather or "Vulcanized Fibre."

Keep the Oil in the Car-Boxes and Sand and Dust out of Them

They are not affected by oil, grease or petroleum; do not cut the axles, as grit does not adhere to them; keep their shape well and will outwear several leather ones. Cut to order of any desired thickness or pattern. Send drawing or sample for estimate. This material is **absolutely free from grit, and will not become brittle and break.**

NOW IN USE ON MANY LEADING RAILROADS, GIVING GENERAL SATISFACTION.

Master Car-Builders desiring to cut their own washers can be furnished with FLEXIBLE SHEET GOODS of any desired thickness; being uniform in quality and thickness, can be cut without waste.



BE SURE TO SEND FOR SAMPLES AND PRICES.

COURTENAY & TRULL,
SOLE AGENTS,
No. 15 Dey St., New York.

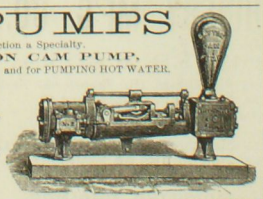
STEAM PUMPS

For Boiler Feeding and Fire Protection a Specialty.

THE IMPROVED DAYTON CAM PUMP,
Designed and built especially for BOILER FEEDING and for PUMPING HOT WATER.

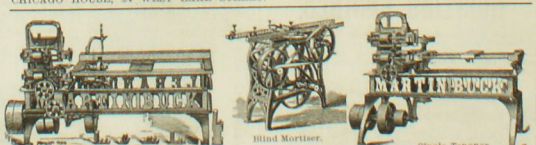
Steam Pumps and Hydraulic Machinery
For Railroad Purposes.

The Combined Pump and Boiler, with Removable Water Cylinder.



The MOST POWERFUL FIRE PUMPS ever made. Every machine warranted. Over **1,800** in use. Send for Descriptive Circulars.

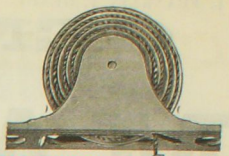
SMITH, VAILE & CO., Dayton, O.
CHICAGO HOUSE, 24 WEST LAKE STREET.



Double Car Tenoner. Blind Mortiser. Single Tenoner.

Single, Double and Triple Tenons and Gaining done on the same machine; especially adapted to car work. Single Tenoners all iron, with carriage mounted on trucks. Blind Mortiser and Borer combined for fixed and rolling slats; Adjustable Grooved Heads, and a full line of Wood-working Machinery.

MARTIN BUCK, Lebanon, N. H.



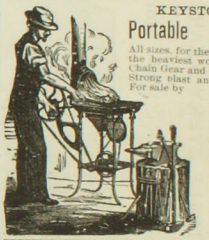
CAR WINDOW BALANCE.

For Passenger Coaches, Sleeping and Parlor Car Windows, consisting of Cone and Coil Spring with wire cord, balancing the weight of sash; noiseless in operation and placed entirely out of sight. Adopted by many of the leading roads. No car complete without them.

O. K. GARDNER, Manufacturer,
28 and Railroad Sts., Pittsburgh, Pa.

JOHN R. GRAHAM,
IMPORTER AND DEALER IN
ROSEWOOD & MAHOGANY
AND ALL OTHER
FOREIGN AND DOMESTIC
CABINET WOODS,
SUITABLE FOR CAR WORK.
Cor. 11th Ave. and 30th St.
NEW YORK.

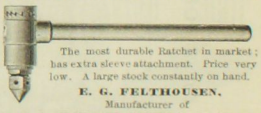
KEYSTONE
Portable Forges,



All sizes, for the lightest to the heaviest work, run by Chain Gear and Flat Belts. Strong blast and durable. For sale by

Keystone Portable Forge Co. 204 North Fourth St., PHILADELPHIA, PA.

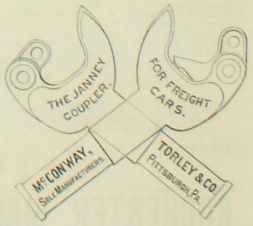
Patent Combination Ratchet Drill.



The most durable Ratchet in market; has extra sleeve attachment. Price very low. A large stock constantly on hand.

E. G. FELTHOUSEN.
Manufacturer of
HAND & AUTOMATIC CYLINDER OIL PUMPS, Ball and Wheel Gauge Cocks, Flue Cleaners, etc.
Salesrooms, 59 and 61 Main Street;
Factory, 72-80 Washington Street,
BUFFALO, N. Y.

BRANCH OFFICES
New York - - - - - C. M. MORSE, Manager
Chicago - - - - - RAZE & LUDLOW, Managers.

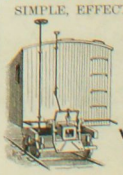


JOEL H. MILLENER,
RAILROAD CROSS TIES
AND
TIMBER.

Ties, spring delivery, Lake Erie and Ontario Ports.

220 Main Street, Buffalo, N. Y.

HAULENBEEK'S
PATENT CAR COUPLER.
SIMPLE, EFFECTIVE AND CHEAP.



Requires no change of Draw Heads or Links and Pins, except that pin being attached to coupler prevents its being lost or stolen.

No loss of life or limb can possibly occur when used.

Information furnished and royalties sold by

W. S. CUDDY
307 N. 3d St., St. Louis, Mo.

(THE BEST LUBRICATOR FOR JOURNALS OR BEARINGS MADE.)

CHALLENGE COACH GREASE

—AND—

HOT-BOX COMPOUND.

Guaranteed to run a car 5,000 miles with one greasing. We will furnish sufficient grease to make a thorough trial, and make no charge for same unless it gives absolute satisfaction.

CHICAGO, February 9, 1883.

W. S. CALHOUN & CO., CHICAGO—
DEAR SIRS: The following is a report of test made with "Challenge Coach Grease," under passenger coach No. 69 up to date: Car made 8,200 miles the first greasing (one box hot); removed journal bearing; applied more grease to the seven other bearings, and continued the test until car had made 20,600 miles. Average reduction by friction, 8 oz. per bearing; average mileage to 1 oz. of reduction, 2,575 miles. Amount of grease used since being packed, 4 oz. to each box or two applications, or 8 oz. to each box in all during test.
Yours truly, A. J. BIRD, Foreman Passenger Depot, C., R. I. & P. Railway.

I certify that the above report is correct.
R. H. CHAMBERLAIN, Div. Supt. Illinois Div.
Approved: B. K. VERBRYCK, M. C. B., C., R. I. & P. Railway.

GRAND RAPIDS, March 6, 1883.

W. S. CALHOUN & CO., CHICAGO—
DEAR SIRS: Referring to your "Challenge Coach Grease," for railway coaches, I have this to say: that, after a thorough trial, I find it far superior, in every respect, to any grease we have yet used. The journals of the coach that were packed with your grease on December 9 last, on examintion to-day look as well as when first filled. Said coach has run 180 miles every day since journals were filled, viz., Dec. 9. I am perfectly satisfied that the "Challenge Coach Grease" will do all that is claimed for it, and have recommended its use on all our coaches.
Respectfully yours, MAT. SCHOOF, Car Examiner, For Chicago & West Michigan Railroad.

Price, 45 Cents per Gallon, f. o. b. Chicago. Address

W. S. CALHOUN & CO.,

Manufacturers and Jobbers of Oil and Waste, and Sole Agents for CHALLENGE COACH GREASE,

Correspondence solicited. 165 Jackson Street, Chicago, Ill.

EAMES VACUUM BRAKE CO.

RAILWAY TRAIN BRAKES.

SALES OFFICE: 15 GOLD STREET, NEW YORK.
Represented by THOMAS PROSSER & SON.

THE EAMES BRAKE is confidently offered as the most efficient, simple durable, and cheapest power Brake in the market. Can be seen in operation upon over eighty roads.

AJAX METALS,

Especially Adapted for LOCOMOTIVE, CAR, ROLL-NECK and MACHINERY BEARINGS, and for Pump-Rods, Valves Plungers, etc., for Mine Use where sulphurous water and acids are found

LETTERS PATENT have not been taken out, so that any one using our goods runs no risk of being associated with any lawsuit. **NO INTERFERENCE** can be filed against the use of Ajax Metals on the contrary, letters of recommendation from the leading steel and iron mills, foundries and machine shops of this country are shown upon application. Also reports of tests as made by MASTER CAR-BUILDERS and MASTER MECHANICS, who are acknowledged AUTHORITY. Full information given on application to

THOMPSON, EPPING & CARPENTER, Pittsburgh; POST & CO., Cincinnati; M. M. BUCK & CO., St. Louis; NAUMKEAG METAL AND FOUNDRY CO., Boston; WORSWICK MANUFACTURING CO., Cleveland; FULTON IRON AND ENGINE WORKS, Detroit; PETTIBONE & MULLEKIN, Chicago.

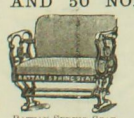
THE ELKINS MANUFACTURING AND GAS CO., 617 and 619 Arch Street, Philadelphia, Sole Manufacturers of AJAX METALS.

HALE & KILBURN MANUFACTURING COMP'Y,

48 AND 50 NORTH SIXTH STREET, PHILADELPHIA, PA.,

ELASTIC SLAT SEAT.

REFERENCES.
N. Y. C. & H. R. R. CO.
N. Y. ELEVATED R. R.
ILL. CENTRAL R. R.
PULLMAN P. C. CO.
PENN. R. R. CO.
N. Y. & N. ENG'D R. R.
BALT. & O. R. R.
AND ONE HUNDRED OTHERS.


RATTAN SPRING SEAT.

EXTENSIVE MAKERS OF

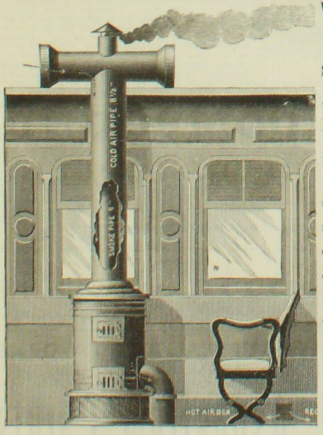
PATENTED CAR SEATS AND SPRINGS.

SPRING EDGE SEAT.

ESTIMATES, CIRCULARS AND SAMPLES FURNISHED ON APPLICATION.

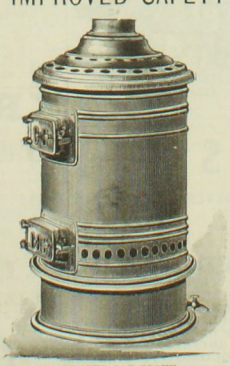
PARLOR CAR CHAIR.

WINSLOW'S IMPROVED SAFETY CAR HEATER AND VENTILATOR.



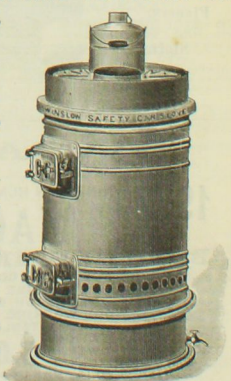
A PERFECT SAFEGUARD AGAINST FIRE IN CASE OF ACCIDENT.

The Strongest and most Durable Stove made. The most economical, on account of the very large volume of air heated. Their use insures HEALTH, SAFETY AND COMFORT.


PASSENGER CAR STOVE.

For BAGGAGE, MAIL, EXPRESS, CABOOSE AND EMIGRANT CARS.

With Flat Top, arranged for trainmen to warm their dinner pails on, and Jacket made of No. 16 irons, so that they will not jam by baggage or mail coming in contact with them.



BAGGAGE CAR STOVE.

WINSLOW SAFETY CAR STOVE CO., Cleveland, O.

CLEVELAND, COLUMBUS, CINCINNATI & INDIANAPOLIS RAILWAY.

Evening trains leave CLEVELAND daily with Rotunda Sleeping Cars for COLUMBUS, CINCINNATI, INDIANAPOLIS, LOUISVILLE, TERRE HAUTE, EVANSVILLE, ST. LOUIS and all points West and South. Morning trains leave Daily, except Sunday, with Through Palace Coaches, for COLUMBUS, CINCINNATI, INDIANAPOLIS, LOUISVILLE, and ST. LOUIS without change. This is the only line making direct communication with all the Principal Trunk Lines of the East for NASHVILLE, MEMPHIS, NEW ORLEANS and all points in Texas, either by way of LOUISVILLE or ST. LOUIS. Direct connection at ST. LOUIS for all Railway Towns in Kansas, Nebraska and Colorado.

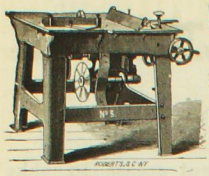
Equipment Comprises all Valuable Improvements.
THE BEST ROAD-BED AND SAFEST ROAD IN THE WEST.

E. B. THOMAS, General Manager. A. J. SMITH, General Ticket Agent.

CLEVELAND TWIST DRILL COMPANY,

COX & PRENTISS

24 and 26 West Street, - - - - Cleveland, O.



No. 3 Wardwell Saw Bench.

ROLLSTONE MACHINE CO.

Wardwell Saw Benches a specialty.

These machines are in use in the car-shops of the Penn. R. R., B. & O., P. W. & B. B. & A. F. R., Mich. Central, and some fifty other of the largest shops in the country

Also, A HEAVY BAND SAW FOR CAR WORK.

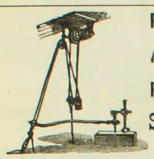
ROTARY, STATIONARY, BED & BUZZ PLANERS

And a large number of other machines for car work.

We are dealers in all kinds of Second-Hand Machinery, Engines, Boilers, Iron and Wood-Working Machinery.

Do not buy until you send for new descriptive list, stating just what you want inclosing stamp.

ROLLSTONE MACHINE CO., 131 WATER ST., FITCHBURG, MASS.



PORTABLE Machines for Use by Bridge, Engine and Boiler Makers.

PORTABLE Drilling, Tapping, Boring, and Reaming Machines

PORTABLE Machines for Wood Boring, Polishing, and Emery Wheel Grinding.

STOW FLEXIBLE SHAFT Co., Limited,

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HAND CARS, PUSH CARS, MINE CARS,

RAILROAD AND MINE SUPPLIES,

BALLAST UNLOADERS,

CAR AND ENGINE Castings.

BUCYRUS FOUNDRY & MFG. CO., BUCYRUS, OHIO

ALSO SOLE MANUFACTURERS UNDER LETTERS PATENT OF THE

Thompson" Iron Steam Shovel, Wrecker & Derrick

AUTOMATIC WATER COLUMN.

JOHN N. POAGE, Patentee and Sole Manufacturer, Cincinnati, O.

INFRINGEMENTS ARE BEING PROSECUTED.

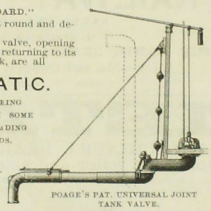
"1882. STANDARD."

The Fireman draws it round and depresses the lever.

The acts of closing valve, opening and closing waste, and returning to its position parallel to track, are all

AUTOMATIC.

AND ARE BEING ADOPTED BY SOME OF THE LEADING RAILROADS.



POAGE'S PAT. UNIVERSAL JOINT TANK VALVE.

IRON & STEEL WORKING MACHINE TOOLS,

FOR USE IN

RAILWAY AND CAR SHOPS.

MADE BY

BETTS MACHINE CO.,

Wilmington, Delaware.

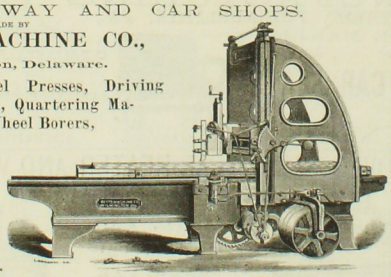
Hydrostatic Wheel Presses, Driving Wheel Lathes, Quartering Machines, Wheel Borers,

Axle Lathes,

Planers,

Slotters,

Shapers.



36-in. Sq. Planer, any length of Table.

$ $ $ $ SAVED $ $ $ $

1977 NINETEEN HUNDRED SEVENTY-SEVEN 1977

MACHINES

BOTH NEW AND SECOND-HAND

COMPRISING MACHINE AND BLACKSMITH TOOLS OF EVERY DESCRIPTION. WOOD-WORKING MACHINERY IN ALL ITS BRANCHES. PORTABLE ENGINES. UPRIGHT and HORIZONTAL STATIONARY ENGINES, 1 TO 300 HORSE POWER. S.C.F.&CO. LOCOMOTIVE FIRE BOX, HORIZONTAL, and UPRIGHT BOILERS, 1 TO 100 HORSE POWER. WATER WHEELS, COTTON AND WOOLEN MACHINERY, STEAM PUMPS, GRISTMILL MACHINERY, Etc., FULLY DESCRIBED, AND PRICES ANNEXED,

☞ Send stamp for same,] In our List No. 23. [stating what you want. ☜

We have the Largest Assortment of Machinery to be found in the hands of any firm in the country.

Works and Main Office, Worcester, N. H. S. C. FORSAITH & CO.

Branch Office and Warerooms, 299 Center street, New York City.

STEEL CASTINGS

FROM 1-4 TO 10,000 lbs. WEIGHT.

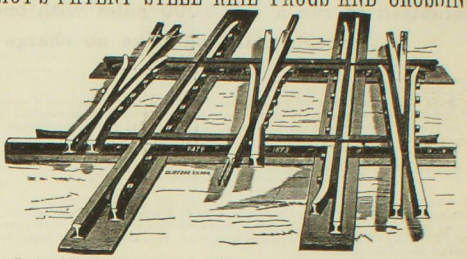
True to pattern, sound and solid, of unequaled strength, toughness and durability. An invaluable substitute for forgings or cast-iron requiring three-fold strength. Gearing of all kinds, Shoes, Dies, Hammer-Heads, Cross-Heads for locomotives, etc. 15,000 Crank Shafts and 10,000 Gear Wheels of this steel now running prove its superiority over other steel castings. CRANK SHAFTS, CROSS-HEADS and GEARING specialties. Circulars and Price Lists free.

CHESTER STEEL CASTINGS CO.,

Works: CHESTER, Pa. 407 Library St., PHILADELPHIA.

C. HUBBARD, Agent, 46 Cliff Street, New York.

ELLIOT'S PATENT STEEL RAIL FROGS AND CROSSINGS.



These Frogs and Crossings are made of steel rail, combined with a wrought-iron frame, and bound together transversely with strong bolts, which gives them great strength and durability without destroying their elasticity. They are connected at all ends by Fish-Plate Joints, and lie on the same tie surface as the running rail without any cutting of ties, thus saving a great deal of time and labor in putting in place on track.

Manufactured by H. & H. ELLIOT,

East St. Louis.

WM. B. BEMENT & SON,

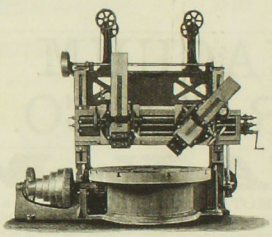
PHILADELPHIA,

MANUFACTURERS OF

Metal Working Machine Tools

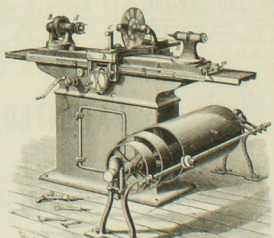
of all descriptions, and a great number of sizes, including also

Steam Hammers, Steam and Hydraulic Riveters, Cranes, Punches and Shears, Bending Rolls, Plate Planers, etc.



BROWN & SHARPE MFG. CO. PROVIDENCE, R. I.

PATENT UNIVERSAL GRINDING MACHINE.



This Machine is arranged for doing a large variety of operations of grinding by the use of solid emery or corundum wheels. An additional movable table, capable of adjustment by a tangent screw and graduated arc, admits of straight and curved taper grinding with the centers of the machine always in line. It is specially adapted for grinding soft or hardened spindles, arbors, cutters, either straight or angular, reamers and standards, also for grinding out straight and taper holes, standard rings, hardened boxes, jewelers' rolls, etc. The work can be revolved upon dead centers or otherwise. The grinding wheel can be moved over the work at any angle, by which means any taper can be produced. Wheels from one quarter inch to 12 inches in diameter can be used either with or without water. The feed works and slides of the machine are covered and fully protected from grit and dust. The grinding of taper holes and angular cutters is provided for with graduated arcs. A special chuck for holding work to have holes ground accompanies each machine. The spindle and boxes of the machine are of cast steel hardened and ground. Distance between centers, 28 inches; will swing 12 inches in diameter. The overhead works consist of a drum, tight and loose pulleys and adjustable hangers with self-oiling boxes. Countershaft should run 400 turns per minute. Tight and loose pulleys, 8 inches diameter, 4 inches face. Weight of machine, with overhead works, about 2,300 lbs. Illustrated Catalogue sent per mail on application.

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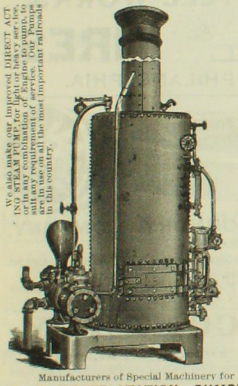

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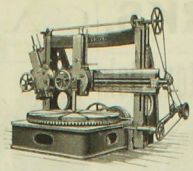

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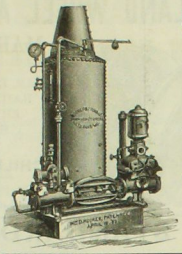

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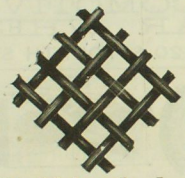

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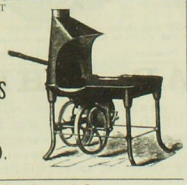

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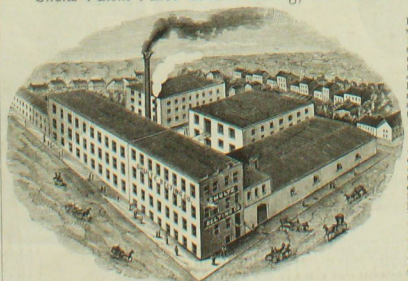

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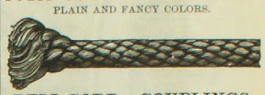

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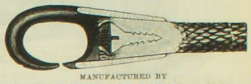

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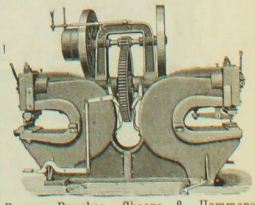

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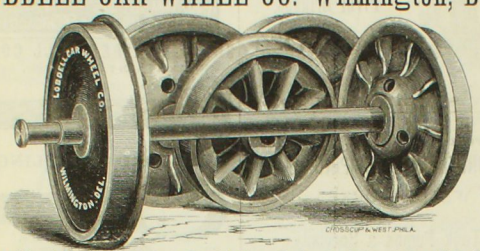

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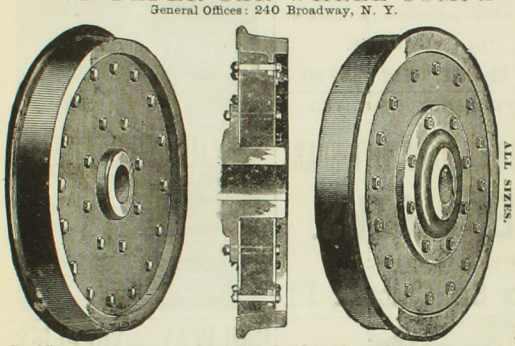

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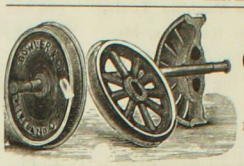

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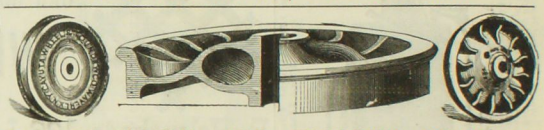

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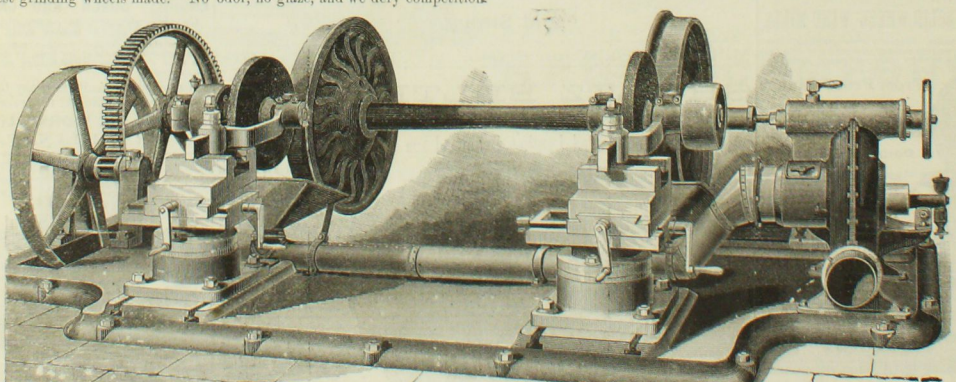

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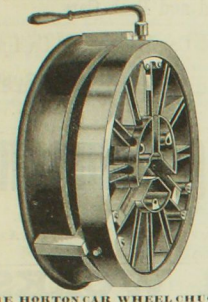

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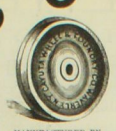

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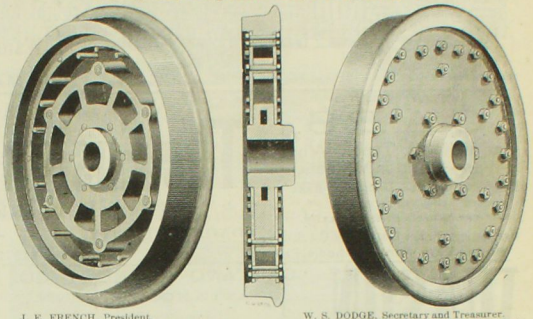

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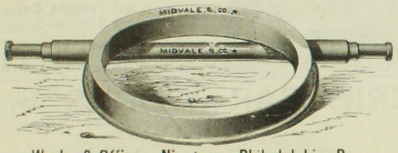

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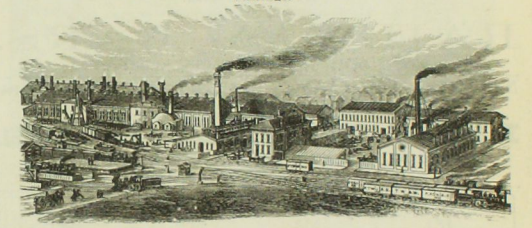

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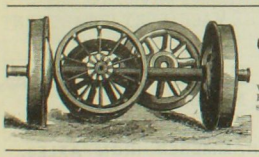

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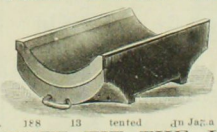

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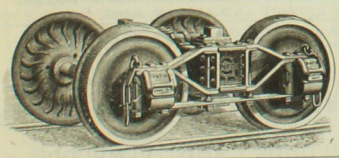
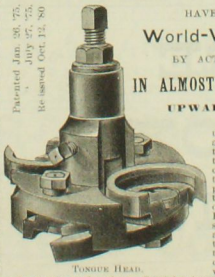
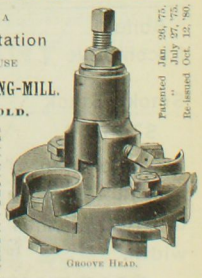


THE THIELSEN TRUCK CO.,
142 Dearborn St.,
CHICAGO, ILL.
We respectfully refer you to the following railroads using this Truck: R. & D.; K. C., St. J. & C. B.; M. R. F. S. & G.; C., B. & Q.; C., A. & St. L.; A., T. & S. F.; A. & N.; K. P.; F. & P. M.; M. C.; St. L., I. M. & S.; B. & M. R. (in Neb.); D. P.; L., L. & G.; C. V.; S. C.; Baldwin Locomotive Works.

THE SHIMER MATCHING HEADS.



Patented Jan. 30, '75. July 27, '75. Re-issued Oct. 12, '80.
HAVE BEEN AWARDED A
World-Wide Reputation
BY ACTUAL EVERY-DAY USE
IN ALMOST EVERY PLANING-MILL.
UPWARDS OF 9,000 SOLD.
The bits arranged in upper and lower series are secured to seats alternately inclined for the purpose of giving clearance to their cutting points—a feature peculiar to this head and the strong hold, of its claim to public favor. Positively the lightest, strongest and most durable matching head in the world. Warranted to work the hardest cross-grained lumber with the greatest ease, and not chip up the edges. Send for descriptive circular.



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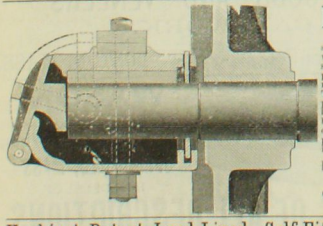
TONGUE HEAD. GROOVE HEAD.
SHIMER & CO., - - - - MILTON, PA.



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This box is designed to provide an end stop for the axle, and thereby dispense with the shoulder and collar, and at the same time not obstruct the process of packing the box. The journal may be made any desired length and diameter. The life of the axle is doubled. The expense of brasses and lubricants enormously reduced; end wear of brasses and hot boxes obviated. It is now in successful operation on trucks of engines, tenders, passenger and freight cars. For further information address
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Hopkins' Patent Lead-Lined, Self-Fitting Journal Bearings,
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MADE BY
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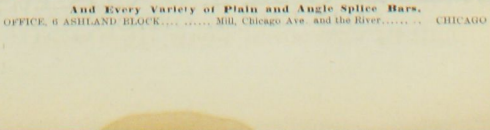

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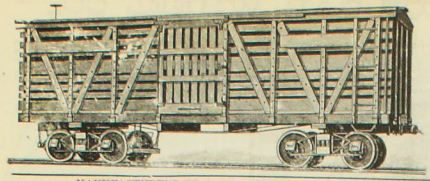

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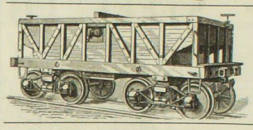

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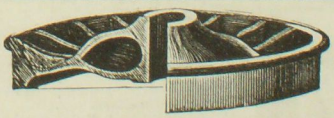

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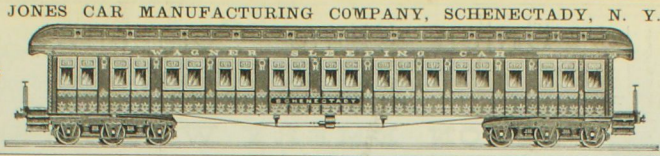

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With all the late improvements.

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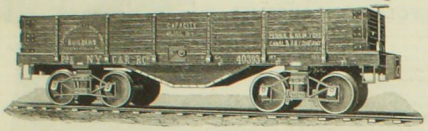

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WHEELS For Freight, Locomotive, Truck, Tender, and Passenger Service, HAMMERED AXLES and other forgings.
Capacity: 20 CARS PER DAY, 200 WHEELS PER DAY.
Wheels Fitted to Axles, and Prices Furnished on Application.

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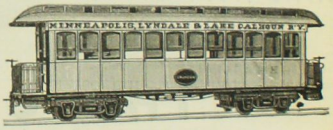

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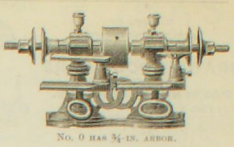

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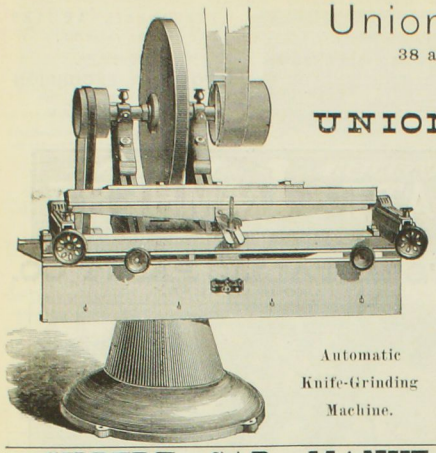
Emery, Emery Wheel Machinery and Tools a Specialty.

Wood Polishing Wheels, Emery Cloth, Quartz, Corundum

GRINDERS' AND POLISHERS' SUPPLIES.

Catalogue on Application.

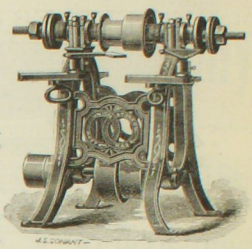


Automatic Knife-Grinding Machine.

Union Stone Company's Patent and Improved Automatic Knife-Grinding Machine, for grinding Planing-Machine Knives, Bookbinders', Curriers' Long Knives and Shears of all kinds. Size, 24, 36, 50, 80, 100 and 120 inches.

The Grinding Wheel is 26 inches in diameter and 1¼ inches thick, with Patent Sliding Boxes, so that the wheel can be entirely used up.

This machine soon pays for itself in the labor it saves. It will grind a knife in less time than on a grindstone, and with a perfectly straight edge, in itself a sufficient reason for purchasing the machine, to say nothing of the economy.



Machine has 1¼-in. ST. EL. ARBOR.

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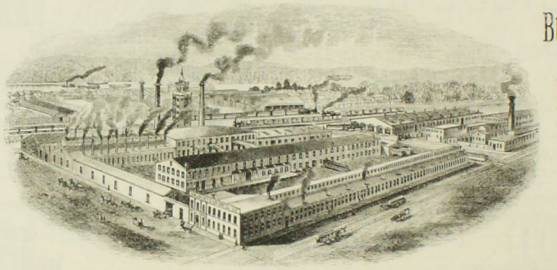


Building, Dissecting and Packing Cars for Export a Specialty.

—ESTABLISHED 1820.— —INCORPORATED 1879.—

THE COWELL PLATFORM

Is the only device making A CONTINUOUS FLOOR between cars in motion.

IT ABOLISHES JERKING AND JOLTING, AND RUNS CARS STEADIER THAN ANYTHING AND EVERYTHING ELSE KNOWN.

We refer to the Flint & Pere Marquette R. R., which recently fully adopted our device, and to the following:

NEW YORK & GREENWOOD LAKE RAILWAY, SUPERINTENDENT'S OFFICE, JERSEY CITY, May 22, 1882.

ROBERT HARRIS, Esq., *Vice Pres't N. Y., L. E. & W. Ry.:*

In accordance with instructions contained in your letter of April 4th, I delivered one combination car and two coaches to the Cowell Platform Company, which they promptly equipped with their patent buffer, since which time the cars have been in constant service.

On Friday, May 19th, the buffers were subjected to a severe test in the presence of several prominent railway officials, and performe i all and more than the Cowell Company claimed for them. Matches and toothpicks were placed between the buffers, in order to see if in starting or stopping the buffers would separate enough to let an article so small pass between them. In all these tests the tension kept up to its work and made the platforms continuous. There was no perceptible jerk when starting, and several times a high rate of speed was reached when the engine was reversed, the air applied and a danger stop made without any jar or unpleasant sensation felt other than in making an ordinary station stop. I feel justified in saying, I believe the Cowell Buffer to be a great improvement over any other device I have seen, and should be pleased to have the coaches of the Greenwood Lake Railway Company equipped with this device; believing the saving in the end would justify the expense. J. H. TINNEY, *Acting Supt.*

L. S. & M. S. RY., SUPERINTENDENT'S OFFICE, EASTERN DIVISION, CHAS. B. COUCH, SUP'T, CLEVELAND, O., April 7, 1882.

J. F. HERRICK, Esq., *Sec'y and Treas. Cowell Platform and Coupling Co., Cleveland, O.:*

DEAR SIR:—Having witnessed the exhibition of the "Cowell Platform and Buffer," at Cincinnati, March 23d, 1882, will say that in my opinion it is an excellent device. It is a safe and convenient Buffer, keeping the train very steady while in motion, especially over track of uneven surface and curves, there being no "lost motion" between the cars, which prevents the jolting and jarring occasioned by starting and stopping trains, as with the ordinary platform, thus saving much annoyance to passengers.

Yours truly, CHAS. B. COUCH.

S. L. Bell, Conductor on the Western & Atlantic R. R. says: "For two years I have been running a train of cars with your appliance, and I consider it the most practical and the most perfect device in use. It runs a train of cars steadier. I think, if properly managed, it will be a great saving to railroads, and I know affords much more comfort to the traveling public."

For further particulars address H. W. STAGER, Gen. Manager.

G. R. Carr, General Superintendent Columbus, Hocking Valley & Toledo R. R., says: "We prefer it to any in use that I have seen."

R. A. COWELL, Esq.:

MEADVILLE, PA., June 7, 1881.

DEAR SIR:—In reply to your inquiry as to my opinion of your platform, I think it the best in use, and I have seen nearly all of the improvements on railroads, as I have been in the transportation department for twenty-two years. I have been running a train on the N. Y., P. & O. R.R., equipped with your platform, for the past nine months, and I can see no wear as yet. I think it will last as long as the car itself. They certainly can be run at a higher rate of speed with greater safety than any other in use. It prevents that rolling motion at the ends of the coaches; it also prevents the jerking of the train in stopping and starting, which is so unpleasant. In fact, I cannot say too much in its favor. There are a great many good things about it that I have not time or space to mention.

Very truly yours, J. W. BABCOCK, *Conductor N. Y., P. & O. R. R.*

J. W. Thomas, General Superintendent Nashville, Chattanooga & St. Louis Railway, says:

"A train of two coaches and a baggage car, equipped with your Continuous Platform and Coupler, has now been in service on our road for over a year, running in our accommodation train 110 miles per day, and has given entire satisfaction, costing nothing for repairs during that time."

J. G. Sawyer, Master Car-Builder of the same road, says:

"I have been using your Continuous Platform and Drawhead in three of our cars on the N. C. & St. Louis road for the past ten months. They work in every way to our satisfaction. In that time they have cost the company neither trouble nor expense. I believe them to be a first-rate Platform and Drawhead."

B. V. HOLT, *Conductor.* J. G. SAWYER, *M. C. B.*

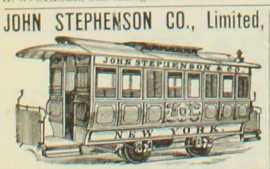
R. F. Smith, General Manager Cleveland & Pittsburgh R. R., says: "Your devices have given us entire satisfaction, having proved thoroughly efficient in accomplishing all the objects intended, and with marked economy as to maintenance."

Hiram Fowler, Superintendent Connecticut Valley R. R., says: "The Cowell Patent Platform has given perfect satisfaction."

Gen. P. Pease, of Ohio Central Ry, after seeing the device on the Cincinnati Southern Ry, says: "I was much pleased with the 'Cowell Platform.' For safety and ease in turning abrupt curves, superior to any I have seen."

THE COWELL PLATFORM & COUPLING CO., CLEVELAND, OHIO.

JOHN STEPHENSON CO., Limited,



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And Omnibuses,

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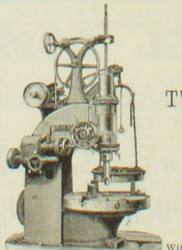
PASSENGER MAIL, BAGGAGE, BOX, GONDOLA, COAL AND ALL OTHER KINDS OF

RAILROAD CARS;

Railroad Car Wheels and Castings, Bridge and Rolling Mill Castings, Bridge Rods, Bolts and

RAILROAD FORGINGS.



Improved Car-Wheel Boring Machine. Bores and faces hub of car-wheel in 5 minutes.

THE MACHINE TOOL WORKS.

FRED'K B. MILES, Engineer.

(Formerly FERRIS & MILES.)

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IMPROVED TOOLS FOR RAILROAD SHOPS.

Wheel Lathes, Wheel Presses, Wheel Borers, Axle Lathes, Engine Lathes, Planing Machines, Drills, etc.

IMPROVED STEAM HAMMERS,

With adjustable Guides for taking up Wear; Keep the Dies Matched and Prevent Breakage of Piston Rods. Sizes from 200 lbs to 20 tons.

SATISFACTION GUARANTEED

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Make the best CARS and WHEELS.

CAR SEATS.

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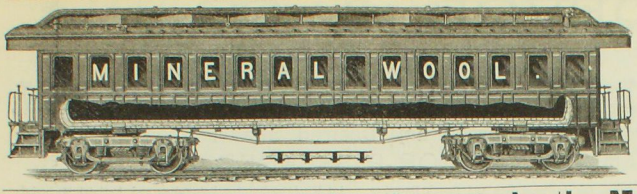

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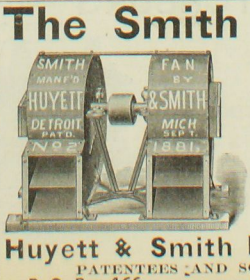

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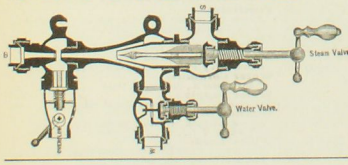

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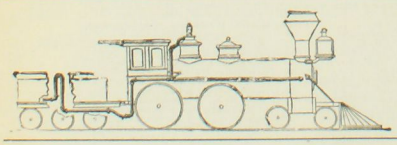

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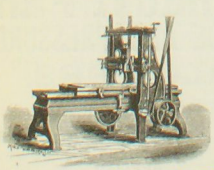
FITCHBURG MACHINE WORKS.

MANUFACTURERS OF



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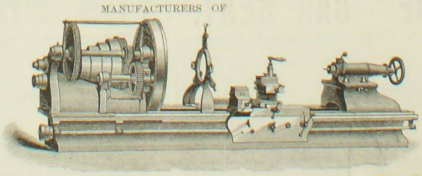

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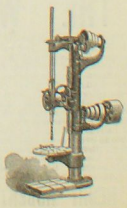
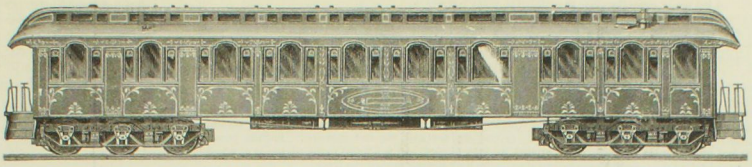


Nos. 13 to 21 Main St. Fitchburg, Mass.

THE NATIONAL CAR-BUILDER.



DEVOTED TO THE INTERESTS OF RAILWAY ROLLING STOCK.

VOLUME XIV. NUMBER 6. | JUNE, 1883. | SINGLE NUMBERS, TEN CENTS. $1.00 PER ANNUM.

Miscellaneous Items.

THE Rogers Locomotive Works have applied for space to exhibit two locomotives at the coming Louisville Exposition, which gives promise of being a great success.

MR. N. N. HORTON, Kansas City, Mo., has just furnished eight cars, with the Horton reclining chairs, making an aggregate of over 300 chairs.

A TRIAL test of the Ward rail-shoe brake device, applied to a locomotive, was recently made on the track of the Pittsburg, Fort Wayne & Chicago road, near Pittsburg. The result is reported to have been successful.

MOST of the electric and other railway safety-signal devices will be shown in operation every day at the Chicago Exposition, some of the companies having secured several thousand feet of space each, to exhibit the practical working of their systems.

THE Huyett & Smith Manufacturing Co., of Detroit, Mich., have recently shipped 22 of its Smith Exhaust Fan Forge and Pressure Blowers, to California, Texas, North Carolina, Michigan, Alabama, Indiana, and two or three other States, also Canada.

THE works of the Parrott Varnish Company, at Bridgeport, Conn., were partially destroyed by fire on the morning of May 17. The buildings in which a heavy stock of varnish was stored were saved, also a part of the raw material that was in the burned buildings.

THE Pittsburg, Fort Wayne and Chicago shops at Fort Wayne have turned out a new locomotive of the Class I, which is one of five to be built. It is a consolidated engine, weighing 97,000 pounds, and has four drivers on each side. It hauls sixty car-loads of freight.

MR. L. S. YOUNG, formerly Master Mechanic and Master Car-Builder of the C., C. C. & I. road, has accepted the position of Superintendent of the Wason Car & Foundry Co., at Chattanooga, Tenn. This company has the most extensive car works south of Wilmington, and the experience of Mr. Young in the car department of railroads will prove a valuable acquisition.

THE most remarkable collection of locomotives, embracing both old and modern types, ever brought together, will be exhibited at the Chicago Exposition. Nearly all the leading locomotive builders of the country will show their latest and most perfect products. Among these will be the largest locomotive ever built, weighing over 70 tons, and fitly called the "Mastodon."

THE Jacksonville (Ill.) Car Works were recently sold at public sale by A. R. Gregory, assignee, and E. C. Kreide, trustee. At the sale Mr. John Dutro, as trustee, bought in the personal property not mortgaged for the sum of $700. He also bid in the real estate, upon which there are mortgages to the amount of some $64,000, for the sum of $100. Mr. A. C. Wadsworth, as trustee, bid in the personal property for the sum of $29,500.

THE Lehigh Valley Railroad Co. is about to make extensive experiments in the use of rails with diagonal joints, the ends of the rails being cut diagonally at an angle of sixty degrees to the axis of the rail. The company has already made experiments in the use of these rails to a limited extent, and the results have been so favorable as to lead to an extensive experiment, with a view of adopting them for the entire system.

THE Pittsburg, Fort Wayne and Chicago road is to have a double track its entire distance. Extensive side tracks have already been constructed, and these will be made continuous by new sidings to fill up the gaps. The new track will be stone-ballasted with material taken from the extensive quarries owned by the company at Dunkirk, Hardin county, Ohio. It is thought that the entire extra line will be completed and in working order within the next two years.

THE new shops of the Cincinnati, New Orleans & Texas Pacific Road will be located either at Chattanooga o Meridian, Miss. Mr. Meehan, the master mechanic of the road, is looking after the latest improvements in design and construction, and these, with the aid of his own extended experience, will enable him to erect what are likely to be the model railway shops of the country, and the largest ones in the South.

THE Electric features of the Railway Exposition at Chicago will include displays of arc and incandescent lighting by nearly all the electric light companies in the United States. The most beautiful effects will be produced by the introduction of colored electric lighting in and about the great fountain in the center of the exposition building, creating floods of gorgeous coloring. This single feature will insure the attendance of crowds every night.

THE Lima (O.) Car Works employ 350 men, and the shops and yard cover 13 acres of ground. They are building 350 gondola, 100 flat and 50 box cars for the East Tenn., Va. & Georgia road, 50 cabooses for the Chicago & Atlantic, and 20 box cars for other roads. The shops are specially well designed, and are provided with machinery of the most improved description. The new Superintendent of the works, Mr. J. C. Clark, was previously with the United States Rolling Stock Co.

THE Terre Haute shops of the Vandalia Line are busy with work. Two switching engines are soon to be built, with four drivers connected, 16x24 cylinders, 48-inch wheels, and no trucks. Eight engines are in for overhauling, and four more at the Effingham shops. The car department has just turned out two 56 ft. combination baggage, mail and express cars, and a large number of freight cars are also being built or rebuilt to keep the numbers complete.

THE Cincinnati, Indianapolis, St. Louis & Chicago road is building at the Cincinnati shops two combination cars, and has just received two new 50-foot postal cars from the Barney & Smith Co. Four engines are in for repairs, and four new 8-wheel engines with 18×24 cylinders and 69-inch drivers, have been received from Schenectady. If the main track of this road were leveled up so the trains could run faster, it would be a pleasant road to ride over.

NEW dining cars are to be put on the Michigan Central road between Buffalo and Detroit. They are said to be the finest cars of the class in the country. They are 68 feet long and have six-wheel trucks and paper wheels. The outside finish is in the regulation ochre shade of the road. The inside wood-work is in cherry. The kitchen is commodious and a marvel of compact and ingenious arrangement. The dining-room contains ten tables, seating 40 persons at one time. The seats are folding opera chairs, upholstered in plush.

THE Indianapolis shops of the Indiana, Bloomington & Western Road are not what may be called a lively place. About 25 men are employed in the machine shop. There are five or six engines in the shops, but there is apparently no work being done on them. Several more dead engines with gorgeous red stacks are standing outside exposed to the weather, which seems to indicate that the motive power of the road is not in very active service. It is perhaps one of the many examples of reorganized roads that had a bad start in life by having terminal points of no particular importance as regards traffic.

THE shops of the Little Miami Division of the Pittsburg, Cincinnati & St. Louis Road, at Cincinnati, are full of work. Three engines are being overhauled, and several new boilers are under way, besides current repairs. A new 50-foot combination baggage, mail and express car has just been completed at the Lancaster shops of the Cincinnati & Muskingum Valley Division, and three new coaches at the Steubenville shops. The standard passenger cars of the road are finished inside in white walnut, and there is some experimenting in oak veneers. Mr. Leroy Kells is the master mechanic.

THE shops of the C.,C.,C. & I. road at Delaware, O., have put the extended smoke-arch on four engines. The arches are like those designed by Jas. Meehan, the Master Mechanic of the Cin., N. Orleans & Texas Pacific road, and illustrated in the December CAR-BUILDER. The paint shop recently erected for the car department, has room for six passenger coaches, and is always full. No new cars or engines are built at these shops. Several new bridges are under way in the bridge department, which is in charge of Mr. McCormack, late of the Cleveland Bridge & Car Works.

THE shops of the Lake Erie & Western road, at Lima, O., have just completed four passenger coaches, 50 ft. long by 10 ft. wide. They were designed by Mr. H. L. Cooper, the Superintendent of Equipment. The inside finish is in maple and walnut, and the outside is painted Pullman color. The decorative work is very tasteful and neat. The last five of ten Brooks engines ordered by the company are expected to arrive soon. These shops, which are new, were designed by Mr. Cooper, and are such models of convenience that we shall illustrate their general plan in a future number of the CAR-BUILDER.

THE shops of the Cincinnati, Hamilton & Dayton road, at Cincinnati, are repairing a number of passenger coaches and changing an old coach into a combination passenger and baggage car. Mr. Allison, the master car-builder, is constructing the ceilings of bass-wood, tongued, grooved and beaded, and laid in half-diamond shape in the clear-story ceiling, and alternately lengthwise and crosswise in the main roof, producing when varnished a very pleasing effect as contrasted with the ordinary canvas linings. Ten new coaches have recently been received from the Pullman Car Works, and are very tasteful in design and finish.

THE shops of the Cincinnati, New Orleans & Texas Pacific Road, at Ludlow, Ky., are completing the last of four switching engines designed by Mr. McMeehan, the general master mechanic. They have 17×24 cylinders and 49 inch drivers. A number of new machines have recently been added to the shops. An electric annunciator connects each bench and machine with the tool room, so the workman can have a tool sent him by merely touching a button. The shops are lighted by electricity. A steam-hammer and heating furnace have been put in for working up scrap. The car department is engaged on 100 fruit cars and 100 33-foot box cars.

A MEETING of car-builders and car wheel manufacturers was held at the Tifft House, Buffalo, N. Y., May 16, for the purpose of deciding upon the standard quality of materials for car wheels and the method of determining the same. After a discussion, which lasted several hours, the meeting adjourned without reaching any conclusion. There were present, F. M. Wilder, of the Erie road; John S. Leutz, of the Lehigh Valley; L. Garey and E. A. Olmstead, of the New York Central; John Kirby, of the Lake Shore; Robt. Miller, of the Michigan Central; Robt. Potts, of the Canada Southern; Robt. McKenna, of the Delaware & Lackawanna; and John Ortton. There were also representatives from the Thatcher, Rechester, Cayuta, Lobdell, Washburn; Griffin, Barnum, Cleveland Foundry, and Paige Car Wheel companies.

THE shops of the Toledo, Cincinnati & St. Louis Railroad, at Delphos, O., are full of work, having six engines in for overhauling. They are expecting ten new Brooks' engines, and have received lately a lot of new ones from the Grant Locomotive Works, which are very handsome machines. Although a narrow-gauge road, many of the engines are 16×22, the stacks standing 14 feet from the rail. The freight cars are loaded with 18 tons, and in many cases they load so heavy with pig iron that the standard-gauge roads to which they deliver make six car loads from five of the narrow gauge loads. The passenger equipment is fitted throughout with the Miller platform, the car bodies being 8 and 9 feet by 50 feet. They have the appearance of being set on push-car wheels. A new car shop, 180×45, has just been completed. To accommodate their new consolidation engines, which are fitted with tanks holding 2,500 gallons of water, a new turn-table is on the ground ready to be put in. The road has a great variety of engines, and finds that in repairs the maintenance of so many patterns is very expensive.

How to Manage Wrecked Trains.

On a few roads the wrecking department is as complete in all its appointments as the master mechanic's department, of which it ordinarily forms a part, while on too many roads the only facilities for picking up wrecks are such jacks as can be spared from the machine shop, a pair of blocks and tackle, and a few pieces of timber picked up in a hurry, the rope of the tackle when wanted being usually unrove and carried off to take the place of a broken crane rope.

Twenty years ago wrecking too often depended upon main strength combined with more or less stupidity, causing additional injury to cars and engines, so that when they were replaced on the track the damage from this source often exceeded that of the derailment and plunge down the embankment. It is a curious fact that broken rails and other causes of train accidents are too frequently found near bridges or on embankments, and the resulting damage is from this circumstance very much greater than it otherwise would be. A collision of two freight engines in which the damage ought to be limited to the front ends and cylinder heads, will, in nine cases in ten, be supplemented by a roll down the bank, which is highest just at the spot where the collision occurs, while at a distance of 500 feet either way there is no bank at all. Broken rails, also, which throw trains off the track are pretty sure to be in near proximity to bridges, and a simple derailment is consequently turned into a serious and expensive accident by the engine running over the ties to the bridge, breaking through the bridge timbers and diving into a little stream which is not large enough to be of any practical use, but sufficiently large to make the job an ugly one for the wreckers. A large wreck is attended with something akin to the excitement of war. There is the same hurry and confusion. A big fire is built of whatever fuel comes handy, a crowd of half-frozen men gather round it if the weather is cold; no one knows how or when the next meal is to be obtained, all being on the alert to make the best out of the worst possible means; one poor fellow has injured himself by lifting, another has had a pick driven through his foot instead of into a tie, and another has been hurt perhaps by the recoil of a rope. A wrecking master must be largely endowed with the qualities of a military commander. He must be cool and self-possessed, and take time enough to form a definite plan before a move is made. He must receive suggestions, and never hitch on to an engine or car without knowing exactly what he is to accomplish by it. If the wreck is a large one, the president of the road company is usually present with a number of useless spectators. Instead of taking 15 or 20 minutes to look over the ground and form an intelligent plan, as he would be capable of doing under other circumstances, the wrecking master, if he is a nervous and sensitive person, is apt to lose his head because the president is looking at him, and the train dispatcher sending messages every 15 minutes asking how soon the track will be clear. The result is, that in his trepidation he hitches on any where, jerking as many cars on the track as he jerks off, and it finally turns out that between the original crash and the subsequent hauling and jerking, the cars are not worth picking up; and, as a last resort, they are got out of the way by setting them on fire and reducing them to ashes.

There should always be found on each division of a road two derrick cars, each capable of lifting 20 tons. With these, and the ordinary tools of a wrecking car—jacks, 20-foot levers, blocks and tackle, plenty of extra rope and chain, etc.—a modern wreck of the average sort can be handled with comparatively little difficulty. Passenger cars must, of course, be handled with much greater care than freight cars, and it will now be shown what is considered the best practice in dealing with wrecks of this class of cars.

In Fig. 1, a passenger car is represented as having left the track and gone down an embankment, where it lies on its side lengthwise the track. Fig. 2 shows a section of the embankment and track, an end view of car, and wrecking tackle in place. Two ropes, *b b*, Figs. 1, 2 and 3, are passed through the clear-story windows, as shown, and fastened to a plank *f* on the opposite side. Two pairs of blocks and tackle, *g g*, are to be hooked to the ropes *b b*, and in the absence of trees or stumps to hitch to, an anchor, as shown, will be necessary. This anchor is made by cutting a trench long enough for the rail *i i*, Fig 1. A cross opening *l l* is then dug, and a tie *j j* pushed beneath the rail, as shown. A chain or rope is fastened to the tie close to the rail, brought over the rail, and the block and tackle hitched to it. If the ground is soft, a plank should be used in place of the rail for the reason that it presents more surface. The tackle rope is then passed round an idler-block *h h*, and led to the engines, of which there is one at each end of the car. Two timbers *d d*, Figs. 1, 2 and 3, are placed as shown, and the engines are then started slowly. The car will then be pulled over on its bottom, as shown in Fig. 3, where it is held by the engines until two more pairs of blocks and tackles can be rigged to be pulled by hand, to a rope *a*, passing through the end side windows, and fastened to the plank *e*. The ropes *b b* and tackles *g g* may be removed and two derrick cars placed one at each end of the passenger car. If the car is a sleeper, a guy-rope from the top of the derrick will be necessary; if it is an ordinary light passenger coach or baggage car, the derrick can be held in position by ice-tong clamps to the rails. The chain *c* of each derrick, Fig. 3, is fastened to the draw-bars, and the weight of the car is then taken by the derricks, while the blocks and tackle hitched to the ropes *a* pull the car on the track between the two derrick cars. When the coach is resting squarely on the rails, one end is hoisted by the derrick and blocked; the derrick then picks up and places the truck on the track, and again takes the weight of the coach, while the blocking is removed to make room for the truck, which is then pushed under the coach into place. The other end is treated similarly, and the coach is ready to be removed. It may be laid down as a rule with passenger coaches and engines, that the first move should be to place them right side up. Coaches frequently in running off get turned so that their length is at right angles with the track, as shown in Fig. 4. In such case the hitch would be made as before, through the clear-story windows, the tackles placed as shown, and two engines employed. The timbers *a a a* should be placed and the car turned on its bottom. Fig. 5 shows the car in this position. A hitch is then made to the draw-bar, as shown, while a rope *b* is attached to the other end to keep it in position. The coach can then be pulled around parallel with the track. If soap is applied to the timbers *a a a* it will facilitate matters. When parallel with the track the coach is to be placed on it, as shown in Figs. 1, 2 and 3.

Freight cars are more easily handled. A derrick will pick one of them up bodily, as shown in Fig. 6, *D* being a bird's-eye view of derrick car, *b* the boom hitched to a freight car held in a rope sling *a a*, and being lifted from the track to one side to clear the track. In replacing it on the tract, it is first turned on its bottom, preferably by means of two or three 20-foot levers or derrick, when the derrick car would pick it up and place it on its trucks on the track. Fig. 7 shows an old-fashioned way of putting freight car bodies on the track. A rope *a* is passed several times around the car and the end fastened. It then passes around an idler-block *b*, and is hitched to the engine at *c*, which on starting up rolls the car toward the track.

Engines are more difficult to handle, especially the heavy Mogul and Consolidation types, because the weight is concentrated on the small surface of the drivers, which plow up and sink into the ground at almost every move. It is therefore time well spent to have plenty of heavy plank at hand to keep the engine out of the mud. In Fig. 8 an engine is shown off the track and crosswise of same, on its side and down an embankment, a combination of difficulties seldom met with. It would first be in order to place the timbers *e e* to receive the engine when right side up and to keep her out of the ground. Three jacks, *a b* and *c* (sometimes a block cut to the curve of the boiler is placed between the jacks and boiler), are placed as shown, beneath the boiler in pits dug for the purpose, and the engine raised from the ground. Two ropes *i i* are passed over each end of the boiler, as shown, and fastened to the frame on the bottom side. Two pairs of blocks and tackle are rigged and two engines used. The derrick car *D* can also be used to advantage if the engine is near enough to the track, and if not, the quick work performed by these cars will frequently pay to run two tracks out to the engine. Place a derrick car on each track and put the engine right side up by a direct lift with the two derricks. Guy-ropes are then necessary from the top of the derrick to a good-sized tree or anchor, as the ice-tongue clamp will bring up the track with heavy lifts. Having the engine right side up, it should be jacked up so the drivers will clear, blocking placed under the fire-box and cylinders and rollers *d d d* beneath this blocking and the timbers *e e*, as shown in the lower half of Fig. 8. A rope *g* will retain the back end of engine in position, while a hitch at the front end with blocks and tackle as shown, will bring the engine in the direction of arrow on the timbers *f f* parallel with the track. Fig. 9 shows a bird's-eye view of the engine after it is parallel with the main track, which is cut and thrown to meet the engine. A line is hitched to front end of engine, by means of which it is pulled up the main track. Fig. 10 is a section of Fig. 9 at the front end of the engine, showing the bank cut away. When an engine lies half way down the embankment it is frequently necessary to cut large portions of the embankment away as well as to block up under the head of the engine when it does not lie parallel with the track. In old times, when an engine went through a bridge and down 70 or 80 feet, it was frequently left there, it being considered that the expense of raising and repairing her would more than equal her value.

Fig. 11 is a bird's eye view, and represents an engine *A* which is supposed to have gone down 70 feet. It would be necessary to first bring her as close to the foot of the embankment as possible, by means already explained. Two derrick cars *F F* are placed, as shown, on temporary tracks, the booms extending over. The drivers, foot-board, cylinders and frames having been disconnected, the two derricks will readily lift the boiler. When the length of the derrick chain is raised, the engine will necessarily have to be supported by slings and well anchored, until the derrick chains can be lowered and a second lift made. When the engine is in water, the difficulties are multiplied, although the derrick car affords a solution of almost any imaginable wreck. It is not, of course, necessary to suppose that the face of the embankment is perpendicular, nor does this make any difference, as the derricks will as readily drag the engine as lift it. We remember a case in which an engine was down a ravine about 60 feet below the track, in which case several weeks elapsed before she was raised. The plan adopted was to drag the engine several hundred feet up the ravine upon a long siding. A track being laid on this siding, and blocks and tackle used to pull her up the long steep incline. Fig. 12 shows a peculiar accident in which a dead engine was pushed off the end of a track, the bridge not being in place. In this case, the back wheels did not leave the track, the front of the engine resting on the ground. A rope *a* was hitched to the draw-bar of the foot-board and two engines to the other end of the rope. The engines kept a heavy but steady strain on the rope. A timber *b* was placed as shown, to retain the engines in position while the excavation for blocking and jacks was made. Two jacks were then placed, one under each end of the bunter-beam, as shown, and the engine jacked up a few inches and then blocked. This was continued until the engine was level with the back wheels resting on the main track. Two heavy square timbers were then placed resting on the abutment and blocking. A freight car truck was then lowered, carried to the front end of engine and raised by blocks and tackle and placed under the front end on rails spiked to the heavy timbers, when the engine was readily pulled on to the main track. Had the engine gone entirely down, as the distance was short, she could have readily been jacked and blocked squarely up to a level of the track. Several years ago an engine went off the track down an embankment, and turned completely over, resting on her dome. Both driving axles were badly bent, and were lifted out of the boxes and a new pair lowered into place, when the engine was turned over and replaced on the track.

Fig. 13 shows a carrying jack which used to be a very valuable tool in a wreck, although its usefulness is now superseded by the derrick car. It consists of a jack on rollers, which, by means of the long screw shown, can be carried from end to end of the bed, which ordinarily allows a traverse of 30 inches. It can with another be placed under an engine or car, when the entire load can be carried 30 inches, and any distance by a succession of moves.

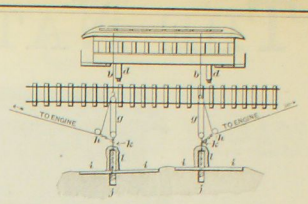
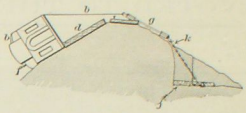


Fig. 1.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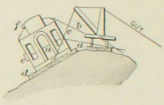


Fig. 3.

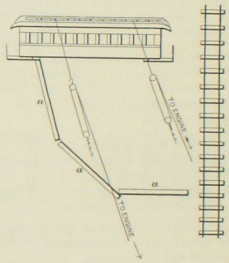


Fig. 4.

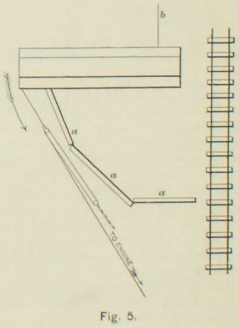
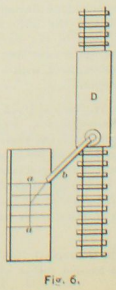


Fig. 5.



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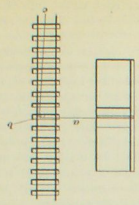


Fig. 7.

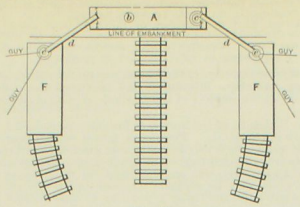


Fig. 11

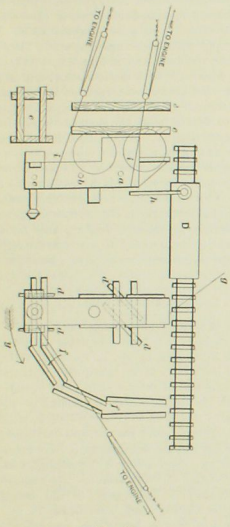


Fig. 8.

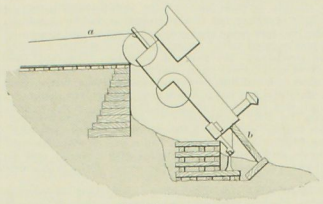


Fig. 12.

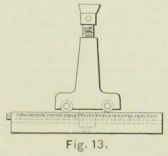


Fig. 13.

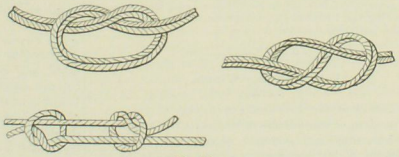


Fig. 14.

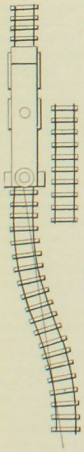


Fig. 9

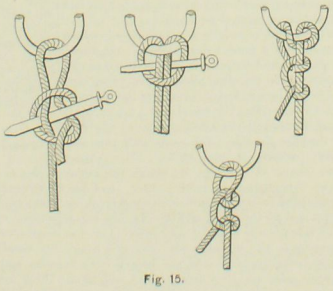


Fig. 15.

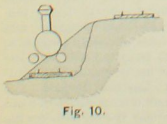


Fig. 10.

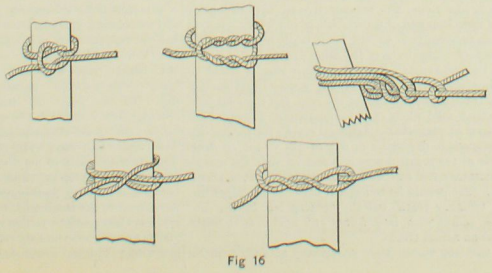


Fig 16

Fig. 14 shows different knots for fastening the ends of two ropes together. They are, with those in Figs. 15 and 16, shown as just started, in order that the course of the rope can be traced. They, of course, only require to be drawn taut to complete the knot. Fig. 15 shows different modes of fastening ropes to the eye of a block or any other similar ring. The two in which a coupling-pin is not used can be continued for several turns more and have ends fastened by binding with twine to the main rope. Fig. 16 shows different hitches to posts or trees; they are all quickly made and are reliable.

The subject of wrecking is deserving of considerable study, as any one who has the superintendence of a big job will be pretty sure to discover. It might be supposed that the civil engineer of a road would make a good wrecker, from his knowledge of the handling of heavy structures. But this is not so. In carrying on his ordinary operations he has plenty of time at his disposal, with powerful derricks and other necessary appliances, but give him a small wreck with a flat car-load of timber, a few blocks and tackles and four or five jacks, and he would despair of accomplishing any thing. The experienced and capable wrecking master, in handling heavy engines and cars with the usual limited means at his command, displays an amount of engineering talent that is none the less practical and effective because it has not been acquired by a regular course of technical education.

April Meeting of the Car-Builders' Club

DRAWING ATTACHMENTS AND CARRYING CAPACITY OF FREIGHT CARS.

The club met on the evening of April 19, at 113 Liberty street, New York. The President, Mr. Leander Garey, announced that the subjects for discussion were Draw-Gear, Dead-Blocks and Car Trucks. He also spoke of the New England Railroad Club, recently organized at Boston, and said that its regular monthly meetings would be continued during the summer. As some of its members had attended the car-builders' meetings that had been held in New York for the last fifteen years, he hoped it would be successful, and that the two organizations would co-operate in sustaining each other in promoting the objects for which they had been formed.

Mr. Packard, of the Baltimore & Ohio road, being requested to open the discussion on draw-gear for freight cars, said that the road he represented had about 16,000 cars equipped with continuous draw-bars, and they answered the purpose very well, giving very little trouble. The ordinary draw-bars used on cars were very defective. There should be a universal device of this kind for all cars, and it should be so constructed as to be interchangeable. He could not specify any particular one now in use as fully meeting this requirement.

Mr. Baker, of the Pennsylvania road, said there were so many kinds of drawing attachments in use that it was hard to designate any particular one as being just what it should be. They were all very defective.

Mr. Mileham, of the New York, Lake Erie & Western, said that the dead-blocks on his cars were 20 inches apart, from center to center, 8 inches wide and 10¼ inches up and down. There was a space of 21 inches when the cars came together. The draw-heads projected 14 inches, and as soon as the springs are compressed that much, they are relieved. This system of dead-blocks might not be altogether perfect, but he considered it as good as any he knew of.

Mr. Peter Smith, of the New York Central & Hudson River road, said that when the short cast-iron dead-blocks are put on with long arms, there was trouble in going round short curves. Most of the injuries to the men in the yard of late had been caused by the use of double blocks. Some of these were 21 inches long, up and down, and it was impossible for the men to reach over or under them.

Mr. Mileham said that the short projection of the draw-heads (1¼in.) on his cars, caused no trouble on short curves. He could readily understand that when the double blocks extended very far down, as was the case with the Lehigh Valley and Delaware, Lackawanna & Western cars, a man has either to get down under the car or almost on top of it in order to get in the coupling pin. The single buffer blocks on cars were usually long enough to strike both dead-blocks and not interlock; but in case the double blocks were very far apart, say 40 inches from centre to centre, there would be danger of interlocking.

Mr. Leander Garey said that the double blocks were to be preferred to single ones, provided there were automatic couplings, or couplings sufficiently automatic to obviate the necessity of handling the links and pins while coupling because the double blocks received the impact on the most effective line of resistance (the sills,) whereas, with single buffers, it was received on the draw-bars themselves.

Mr. Mileham said the yardmen on his road felt more safe while coupling Erie cars than coupling others, because in the former case there is 21 inches space, and a man has only 14 or 15 inches to reach over in making a coupling, while the draw-head can only be forced back 1¼ inches, and he has three or four inches between the pin and the inside block, to save his hand.

Mr. Gifford exhibited and explained his automatic coupler.

Mr. Leander Garey said he had once equipped an entire train with automatic couplings, and put the train out on the road, and was soundly abused for it by the trainmen, and especially by the brakemen, who tried in all sorts of ways to get rid of them. The pin had to be raised up in order to make it self-coupling. They would hold the pin up and couple in the old way, and in less than a year the pins were all off.

Mr. Gifford said that a great many brakemen fancied that when an improvement of that kind is put on a road they are going to lose their places. Some cars with the Gifford coupler were at Pullman, Ill., a while ago, and when the engine came up to couple on an Irishman stepped forward to get hold of the pin. He was told to remain where he was, as it would couple itself. After it had done so, he turned to a bystander and said, "I would condim that at wanst." "Why?" asked the bystander. "Shure, any farmer can switch with that," he replied.

Mr. W. V. Perry, of Chicago, described his safety-coupling device. He said the dead-blocks in use on the Erie road were, in his opinion, the best in the world. They were partly wood and partly iron, and faced straight, and the men could get over and under them and be protected.

Mr. Everit, of New Haven, described his coupling device.

Mr. Leander Garey said: Every railroad company is de-

sirous to get some device suited for general use, and one that will protect trainmen. Some of the companies, I think, are over anxious; that is to say, they are ready to adopt devices which in the judgment of experienced railroad men would prove to be utter failures. I have no doubt that when a device is produced that will meet what is required it will be universally adopted, although the adoption will necessarily be gradual. I am in favor of small double dead-blocks, carried as closely together as possible. Those of the Erie road are perhaps as good a style as can be devised, when we get the right coupler. The increase in the carrying capacity of cars and weight of engines, and the desire of road managers to transport freight as rapidly and as cheaply as possible, require important changes in the construction of cars and coupling attachments. The breakage of cars during the past year in consequence of the increase of loads, is from 50 to 100 per cent. more than it was five years ago, and if this keeps on, more real estate will be needed for shop ground, and a larger force of men will have to be employed in order to keep cars in a running condition. As regards freight car trucks, I think that the present standard axle, with the weight of car bodies and trucks and 20 tons of freight, is loaded to its maximum of economy. I am told that some parties are building cars to carry 25 tons, but it seems to me if we are to go above 20 tons, there are a number of things that should be taken into consideration. What kinds of freight do we move that will admit of more than 20 tons being put into our present size of cars? We can put in an increased weight of coal and iron, and some other kinds, by simply increasing the height of the car body. If any change is to be made to exceed 20 tons, it seems to me that we should go to the extreme limit permissible by road-bed, rails and bridges, and this would require larger axles and larger and stronger cars, including coupling attachments. The road managers are now talking about 25 tons, and they will soon be asking for 30 and 35, and even 40 tons, and it behooves car-builders to be prepared to meet the demand. It is a question also whether the present weight of wheels, and the quality of iron put into them, are more than sufficient for 20 ton loads.

Mr. Perry thought 20 tons high enough. Anything more than that means the destruction of railroad property, rails, brakes, switches, cars, everything. Better keep below that than go above it. He believed that in 15 years the roads would be using lighter engines than the heavy Consolidation and Moguls in use now.

Mr. C. A. Smith called Mr. Perry's attention to the amount of freight carried by the roads during the last ten years in excess of what was carried previously, and all of it carried in 10 ton cars, and all such cars do not carry 10 tons, or did not during the period named. The New York Central could not move the freight it does move, with 10 ton cars and light engines, unless it had four tracks. It has hard work now to do it with the increased capacity of its cars and the increased power of its engines. He did not believe in making even 25 tons the limit. He saw some new cars recently that were rated at 50,000 lbs. capacity. This was all right; nor would there be any stop until 30 tons was reached. If new axles were necessary, make them. The future freight tonnage between the East and West was beyond calculation. Whatever it may be, it must be carried, and carried in the cheapest possible manner, and the way to do this was to have cars of the full capacity of the roadway. He hoped to see the day when freight cars would all have a capacity of thirty tons. He would be satisfied with this. The committee appointed by the Association on this subject, ask in their circular what should be the diameter of journals and size of wheel-seat for carrying 10,000 pounds per wheel, which would be 80,000 pounds per car. These questions were suggestive of a 40-ton car. He had hoped to hear some remarks about the length of truck-wheel base for the standard 4–8½ track. This was a very important matter with respect to freight cars, saying nothing about passenger cars.

Mr. Leander Garey said that judging of the future by the past, the freight tonnage that would be transported ten years hence would be double what it is now. In such case our present terminal facilities would be inadequate. There were two ways in which this extra work could be done. One was to double the rate of speed of present trains; another was to double the capacity of cars. If we were to go beyond 20 tons, let us go to the extreme limit that the present condition of the roads would permit, say 40 or 50 tons, or whatever the limit might be, and make an entire change in the construction of cars. There was no end of bent axles and broken trucks in carrying 18 and 20 tons in our present cars. These difficulties occurred, not merely every day, but every hour. During the month of March some 16,000 cars, according to the inspectors, were found broken or defective on the New York Central. If this was to be doubled up, he did not know what was to be done.

Mr. Peter Smith spoke of the prevailing practice of loading cars above their marked capacity, and above the capacity of the bolts, springs and axles. The channel-bar bolts were the weakest part of the trucks.

Mr. C. A. Smith thought that if the average car loads in trains going east and west could be correctly ascertained, it would be found that one-third of such cars were not loaded to their full carrying capacity. It must be remembered that the full weight of only certain kinds of freight could be got into cars.

New England Railroad Club.

The regular monthly meeting of the Club was held at its rooms at the Boston & Albany Railroad passenger station, on Wednesday evening, May 9.

The President, Mr. F. D. Adams, announced the death of Mr. Gleason, the late Master Car-Builder of the Old Colony Railroad. A committee was appointed to prepare resolutions expressive of the sense of the Club in reference to the event. The resolutions were unanimously adopted, and a copy of the same ordered to be transmitted to the family of the deceased.

The committee appointed at the April meeting on the subject of defective freight cars received by interchange with other roads, reported the following resolutions, which were unanimously adopted:

Resolved, That on and after Sept. 1, 1883, we will not accept cars with defective brakes, ladders, handles or running boards, without the right to put in "good running order" at the expense of the road offering.

Resolved, That a road receiving a carded car shall have the right to repair the defects enumerated on the card, and make bill to the road carding. And it is also further

Resolved, That the members of the Club who attend the Master Car Builders' Convention at Chicago, June 12, 1883, be and are hereby requested to bring about a modification of the rules of interchange to cover the points in question.

Professor Ordway, of the Massachusetts School of Technology, was then introduced and addressed the club as follows on the subject of Lubrication of Car Axle Bearings.

Mr. Richards, of the Boston & Providence road, did not believe in cheap oils. Petroleum mixed with other oils would not do the work. In heavy cars runn ng in fast trains it was very difficult to prevent hot boxes. He had once asked a man who was an oiler how he fixed boxes for hard work, and he replied: "I pour in all the oil the boxes will hold, and then I pour in a little more." A school teacher once asked a boy to give a definition of the word "salt." "It is that stuff," said the boy, "that makes potatoes taste bad if you do not put it on." It was very much the same with poor oil.

Mr. Gordon, of the Concord road, said he was using oil on freight cars that cost 18 cents a gallon, but by some mistake he had had some that cost only 8 cents, and it seemed to be just as good as the other, and was moreover a saving to the company. He thought, however, when the first hard frost came, and a man had to go around with a kerosene stove or a red-hot iron to thaw out the boxes, that kind of oil did not pay. Upon engines he was using Galena oil, and found it very good indeed. Upon the connections he used "Lubricene," costing 30 cents a pound, and one engine had run 5,802 miles with 3¼ pounds of it, costing $1.02. Another engine had made 13,303 miles with 1½ pounds, and another 10,157 miles with 1 pound, and he rarely had any hot boxes, and the wear of the boxes was slight.

Mr. Marden, of the Fitchburg road, used oil costing 27 cents. He had used on passenger cars some 20 barrels of oil, costing only 10 cents per gallon. He would not say it was cheap oil, but it might be just the same kind he had been paying 23 cents for. He did not think that car-builders could undertake to say in the face of oil men what oil the roads were buying.

Mr. Adams, of the Boston & Albany road, would not pretend to say what oils were made of or how they were manufactured, but when he found an oil that had a good body and worked well, and gave no trouble, he was very well satisfied with it if the cost was not excessive. One of the regular conductors on one of the fastest trains between Springfield and Boston had told him that he did not remember having a hot box on the trains for three years. This result might possibly be owing to the fact that 42-inch wheels were largely used in the passenger equipment of the road.

A letter from Mr. Leander Garey was read, saying that Galena oil, at a low cost, was used on the New York Central cars with good results.

The Executive Committee of the Club was increased by the addition of two members, Mr. Ross Kells, Supt. of Motive Power of the New York & New England road, and Mr. John Kent, the Boston Agent of A. French & Co., of Pittsburg, Pa.

It was voted that the next meeting of the Club be held on the second Wednesday in September, and that at some time during the interval the members have an excursion down the harbor and a club dinner.

Cast Iron Car Wheels.

To the Editor of the National Car-Builder:

At a meeting of car-builders in Buffalo a few weeks ago, the weight, shape and material of cast iron car wheels were discussed, but apparently without coming to any definite conclusions. This seems to indicate that there is some formidable difficulty in the way of determining these points, but precisely in what the difficulty consists, I can not quite make out. Will you allow me to make some suggestions upon the general subject, which your readers may take for what they seem to be worth?

Let three or more patterns of the most approved wheel sections be made, let a good wheel molder "put them up," or mold them, and let the same man pour them all, and have them placed in the same pits. When taken out, let each wheel be put in a hydraulic press and have its center pressed out by supporting the wheel at the rim or tread on one side, and bringing the pressure to bear on the side of the hub on the opposite side. The gauge will then determine which wheel is the stiffest. The capacity of a given shape or section to stand up under the load, as compared with other sections, could be ascertained with a press sufficiently powerful, by supporting the wheel at the tread, and bringing the pressure to bear each side upon a piece of axle inserted in the hub, and as close up to the wheel as possible; or a heavy iron lever might be arranged to rest on the axle close to the wheel on each side, and then drop a heavy weight on the levers, the best wheel being the one that will stand the most blows or shocks without cracking. By methods something like these, the comparative strength of wheels made of new iron and of those made of old wheel scrap, to any given percentage of weight, could easily be ascertained, the wheels of course to be of the same pattern.

As to the weakening effect of cracked ribs, it could be approximately arrived at by taking a wheel and sawing through three or more, or all of the ribs, and then subjecting it, with a solid wheel of the same pattern and material, to the tests as suggested. Artificial cracks for testing can easily be made in the center or web of the wheel, by drilling a hole at the points where it is desired that the cracks shall commence and end, and then sawing between them. This, it is true, would leave a space between the edges unlike an ordinary crack, but the opening left by the saw could be calked with iron filings and acid so as to fairly represent an actual crack.

If all cast iron wheels were universally of such a make as to give the best service that such wheels are capable of giving, they would undoubtedly be the cheapest and most economical wheels as compared with other kinds. Why, then, is it not in order for the Master Car-Builders' Association to test the capacity of iron wheels practically, as one of its committees have tested the arch-bars of trucks? Lake Superior and Salisbury irons certainly make the best wheels, and it is equally clear that any addition of remelted old wheels weakens the product. Let the association experiment with wheels of different irons, proportions and sections, ascertain the effect of cracks, etc., and announce the results, which would of course be all the more valuable from the fact that the members are all practical railroad men, and know from daily experience what is requisite for good serviceable wheels. They may not wish to designate any particular brand of pig iron as most suitable, and certainly ought not to do so, if their experimental tests leave it open to doubt; but in case all doubt is removed, the course to pursue seems plain. Wheel-makers are simply what their name imports. They are in a certain sense molders, and it does not strictly devolve upon them to determine with mathematical and scientific accuracy just what kind of wheel section is the best. The designer of a steamboat engine does not leave it to the foundryman to decide what the shape and proportions of the walking-beam shall be. Admit that the maker guarantees his wheels to give a certain mileage, he is not held responsible for an accident caused by a broken wheel. Let the association settle these points by skillful and careful tests, and then every road can solicit bids for wheels, specifying the material, proportions, etc., as the master mechanics do in ordering locomotive boilers, and let a good inspector be sent to the foundry to see that the right kind of iron goes into the cupola.

SHARNHORST.

New Dining Cars.

The first one of a lot of new dining cars for the Baltimore & Ohio Railroad, has been completed at the Mount Clare shops in Baltimore, by Mr. L. Packard, the Master Car-Builder of the road. It is called the "Manhattan," and is 60 feet long and of extra width. The outside finish is uniform with that of the standard coaches of the line. The interior, says the *Baltimore American*, is finished in black walnut, French burl walnut and oak head lining. The prevailing color in the decorations is olive green, with old gold and ebony. The ceiling is embellished with black panels of a novel and effective design. The wood-work is very beautifully carved. The 8 tables in the dining-room are a conspicuous feature of the car, being 18 in. wider than any other now used in dining cars, and afford plentiful room for dishes, etc. The seats, which are of olive green leather, fold easily, and rest the occupant in a very comfortable way. Large plate-glass mirrors face each table, and windows of unusual width give opportunities for observation and sight-seeing. Six double student lamps light the car at night. The bronze basket-racks are of the latest and most tasteful pattern. Separated from the dining-room by an olive green lambrequin is the pantry, which is especially commended for the excellence and completeness of its appointments, consisting of a handsome walnut buffet and various lockers for silverware and dishes. Beyond this is the kitchen, in which every convenience essential to the preparation of the most elaborate meal is at hand. It is fitted up with a 6-ft. Wilkes cooking range, ice chest, refrigerator, dish receiver and provision boxes. At the other end of the car is the wine closet with its refrigerator attachments. The car is provided with a full set of handsome silverware, with "Manhattan" engraved on every article. There is a wonderful economy of space displayed, and every little nook has been converted into a receptacle for towels, provisions, etc.

Twenty-eight Foot Open Cars for Street Railways.

Mr. J. H. Robertson, the Superintendent of the Third Avenue Street Railway, of New York, is building at the company's shops a large number of open cars for summer service on the line, that are in many respects a decided improvement upon the ordinary cars of this class, or what are usually called excursion cars, with seats running crosswise, and a foot-board for the conductor on each side. These new cars are 22 feet long in the body, and 28 feet long, including platforms, and have a wheel base of 9 feet. The front platform is occupied exclusively by the driver, who is shut in by wire-screen gates on each side. The seats are continuous, and run lengthwise through the center of the car, back to back, and will accommodate 16 persons on each side, or 32 in all, who sit facing the open car side, the lower part of which is inclosed with a handsome wire screen surmounted by a light railing. To the edge of the roof are attached two awning-cloth curtains. The outside one, being designed to protect the faces of passengers from the sun, only lets down about half way, while the inner one, or storm curtain, reaches nearly to the floor when it is dropped. The seats and seat backs are cane, and there is sufficient room between the sitting passengers and the car side for the movement of the conductor, without crowding, unless the space is obstructed by people who are standing. The rear platform, which is the only entrance to the car, is spacious and roomy, and the lower steps, instead of being entirely

on the sides, are partly on the end, and form an angle at the corners of the platform, so that people can step off or on to or from either direction, or midway between. These cars, although they are five feet longer than the ordinary box street car, are but a very trifle heavier, owing to the lightness of the roofs and side construction, the heaviest part being the base or floor framing. The long wheel-base does not interfere with curving, which is to some extent accounted for by the use of the Baltimore swinging axle-boxes, which allow a lateral motion to the car body. The cars are trussed upon each side with two-inch pipe-rods. In the front end are four windows of 16x30 glass, through which there is a good outlook ahead. Each car has two single lamps at the forward end, and one double one at the rear end, also a fare register. No provision is made for smokers. In this respect the cars will be popular with non-smoking men, ladies and children. The whole number to be built is forty, and more than half of them are already completed. The line having easy grades and but few curves, it is expected that two horses will be sufficient for a car, except on the steepest grades with very heavy loads, when a hill-horse will be attached. These cars will be an important and much-needed addition to the equipment of the line in view of the heavy traffic with which it is burdened during the warm season.

New Sleeping Cars for the Canadian Pacific Railway.

The Wilmington (Del.) *Morning News* contains the following description of four new sleeping cars recently completed by the Harlan & Hollingsworth Co. for the above-named road :

"Their names are Keewatin, Assiniboine, Qu'Appele and Kaministiquia. They are each 58 feet in length, 9 feet 10½ inches wide, and 9 feet 8 inches high in the centre. The whole interiors of the cars are finished in solid mahogany, the back-ground being flat finished, the fillets of the panels highly polished, and many of them as well as the bulk-heads richly carved. Much of the carving is done by machinery, and after being finished by hand is a great improvement over the old and tedious style of hand-carving. The body of each car contains twelve berth sections, with all the latest improvements. In the bulkhead in the centre of each lower berth is placed a fine beveled plate-glass mirror. The seat-arms are made in antique style and neatly carved, while the panels of the upper berths are finished with very handsome Spanish mahogany veneering, highly polished and elaborately carved corner ornaments. Each berth is furnished with an improved woven wire mattress in addition to the ordinary hair mattress. Each car also contains a state room furnished with a berth section, as well as men closets, dressing rooms, heater room, etc. All the doors contain as panels, mirrors of beveled plate glass, and all the metallic trimmings are finished in gilt. The ceilings are of wood, tastefully decorated. The windows have a double sash and are of crystal plate glass, each being supplied with a spring-roller curtain and surmounted by a panel of richly embossed glass. The deck lights and transoms are also of embossed glass, and the panels above the berths are finished with amboline veneer inlaid with ornaments in gilt and mother of pearl. The men's dressing room is furnished with a double marble-topped washstand, large beveled plate glass mirror, a saloon and every necessary convenience. The ladies' saloon is also handsomely furnished and contains marble-top tables, etc. Each car is lighted by six gilded double chandeliers of the Adams & Westlake pattern, and heated by a Searle's heater. The upholstery of the seats is in crimson plush, the floors are covered with a luxurious Wilton carpet, and the berth hangings are of a rich and heavy material. The cars have end ventilation and pivoted transoms. The exteriors are painted in Canadian Pacific standard color in the Eastlake style and are richly ornamented in maroon and gold. The cars have Miller platforms with silver-plated railings. The trucks are of the Canadian Pacific standard with six wheels each. The latter are of steel and 40 inches in diameter. They also have French's elliptical and spiral springs, and Westinghouse automatic air brakes, as well as double-acting hand brakes."

The Oldest Locomotive Engineer.

The Baltimore *Sun* says: "The Baltimore & Ohio will send to the Chicago railway exhibition the oldest engineman in America. His name is Tom Galloway, and he has been in the employ of the company ever since 1833, just half a century. He was born September 25, 1809, in Baltimore County, and is of Scotch descent. He was first employed as train dispatcher, but afterward took charge of the 'Lafayette' as engineer. He has been running almost continuously since on the Washington branch. The only change of route was in 1857, when he ran for four months from Baltimore to Martinsburg and return. Taking out these four months, the old gentleman has been running for 42 years between Baltimore and Washington, averaging sixteen trips a week. He has, therefore, made 34,944 trips in all, and, as the length of each trip is 40 miles, has traveled 1,397,796 miles, fifty-six times the circumference of the earth. He has only had two accidents, and they were so trifling that they are not worth mentioning. He has had twelve children, ten of whom are now living. One of his sons is a conductor on the Baltimore & Ohio; another is "boss" of the machine shops at Garrett, Ind., and another is an actor in Maggie Mitchell's troupe. He has a grandson a brakeman on the road. Father, son and grandson, working at the same time, on the same road, is a notable circumstance, and the only one of the kind known. Mr. Galloway has never been sick, and is as hale, hearty and genial as ever."

PROBABLY the best authenticated train speed ever made in this country was recently accomplished on the Pittsburg, Fort Wayne & Chicago road, a distance of 148 miles being run in 166 minutes, including three minutes for stops. The run was made between Fort Wayne and Chicago, the train consisting of a Boon engine No. 199 (16×24 cylinders) and four passenger cars. This was such an extraordinary performance that a photograph was taken of the engine and the engineer, Mr. Tony Kelker, to which the particulars of the trip were attached, to be framed and hung up in the offices of the road officials. It is thought that no feat equal to this has been performed upon the English roads, even when allowance is made for the weight of engine and train (140 tons). Mr. Eugene Fontaine, the inventor of the engine which bears his name, was once employed as a locomotive engineer on this road. There was some rivalry between him and Mr. Kelker, but the latter, with his pet "Boon," beat the best time of his rival by 13 minutes. This engine, it is said, has been run upwards of 11 years, daily, without any work being put on the links. The engines designed by Mr. Boon have served as models for other roads. A sliding fire-box door, operated by a crank handle close to the left-hand back brace, is extensively used on the engines of the road, and is greatly preferred by the firemen to the common door.

MR. GEO. HUNTER, the chief draughtsman of the Terre Haute & Indianapolis Railroad Co., has designed a locomotive spark-arrester which has proved to be very effective. It consists of an inverted cone made of about No. 10 steel wire, which incloses the nozzles, and which therefore provides an unobstructed range out of the stack, no netting being used. The back side of the cone is solid, while the front side is perforated with ¼×1¼ inch holes. The front side of the exhaust nozzles are tapped for a pipe opening into another larger pipe leading to a receptacle. The smoke finds an exit through the cone, while the sparks by their greater momentum are carried past the cone, and strike the front door-drop where they are caught by the exhaust from the nozzle and shot into the receptacle which hangs between and below the cylinders. This receptacle is emptied at each trip. Mr. Hunter has had several arrangments of the above for depositing the sparks on the track or on one side of the track, but finds that no method is as satisfactory on passenger trains as to retain them in the receptacle. The method has been so successful as to meet the approval of Mr. McKeen, the president of the road, and elicit commendatory letters from the Baldwin Locomotive Works and several prominent railroad men.

AN alleged improvement on the Westinghouse air-brake is to be seen at the shops of the Kentucky Central Road. The improvement is said to consist in making the cylinder under each car large enough to be used as a reservoir, and by keeping both ends full of air under pressure the air may be exhausted from one end, and the brake set by the pressure in the other end. In addition to this, there is an ordinary stationary engine governor driven from one of the axles, the object of which is to release the brake as soon as the wheels cease to revolve either by sliding or otherwise. The governor is set in motion by frictional contact as soon as the brake is set. When the wheels begin to slide the governor is driven more slowly, thus reducing the pressure in the cylinder by opening a valve for the escape of the compressed air, and closing another to prevent an additional supply until the sliding is over and the governor at work again. The inventor of the plan is a colored man.

The shops of the Louisville & Nashville Railroad at Louisville, Ky., are building four consolidation engines with extension smoke-arch and without crown bars. The cylinders are 20x24 in. ; diameter of drivers, 50 in. ; length of fire-box; 9 ft. ; crown sheet, 4x9 ft. ; diameter of boiler shell, 5 ft. ; number of flues, 215 ; size of flues, 2 in. The boiler is made of ¼ in. steel. There are also 13 engines in the shops, some of which are being rebuilt and others overhauled. In the passenger car department 50 new coaches are in course of construction, to assist in bringing "Grangers" to the great Southern Exposition which is to open August 1. The new coaches are devoid of any special novelties in their construction. Two new 60-foot baggage cars and one 50-foot postal car have just been completed. The freight car shops turn out an average of two new cars per day, besides rebuilding and repairing an average of 20 cars per day. Within the past few months 34 fruit cars, 4 four-wheel cabooses, and 120 box cars have been built. The shops are working a large force of men on full time.

THE Baldwin Locomotive Works have just put in a double-headed rod boring machine, designed and built for them by the Newton Machine Tool Works of Philadelphia. This is the first tool of this kind built in this country, and is designed for boring both ends of a locomotive rod at one operation.

An Old Train of Cars.

(See full-page engraving.)

Since the advent of railroads the improvement in all the appliances for their operation has been so great and continuous that we are falling into the habit of using the terms ancient and modern to designate the relative excellence of the earlier and later methods of construction in their respective details. A period of forty years is not a very long interval in the world's history and progress, but as a measure of the rapid development of railroads, in this country especially, it covers a prodigious gap. With respect to cars and locomotives, it reaches all the way from the little miniature trains that astonished the natives and frightened horses and cattle between Albany and Utica in 1839, to the Pullman sleeping-car lightning express between New York and Chicago in 1883. The wonderful perfection and capacity of the passenger-train cars and engines now on our roads, make it all the more interesting to go back, as it were, and contemplate, the relics of early construction, wherever such relics are to be found. Their value as curiosities is determined only by the lapse of time, and unfortunately many a rude and unique specimen has been consigned to the scrap-heap to get it out of the way, the thoughtless ones who did it little dreaming that it would be wanted at Chicago about this time to help magnify the display in the department of "ancient" appliances.

In order to give our readers an opportunity to contrast what may be called the ancient and modern in car construction, so far as it can be done pictorially, we give in this number of the CAR-BUILDER two full-page engravings, one representing a train of cars (with the engine) that has been in service 34 years, and the other the present standard passenger coach of one of the great trunk-line roads between the East and West.

The train represented in the first-named engraving is said to be the oldest train now in regular service in this country. The cars were built at Cleveland, Ohio, during the latter part of the year 1849 and the early part of 1850, by the late William F. Smith, who was for several years the master mechanic and car-builder of the Cleveland, Columbus, Cincinnati & Indianapolis Railroad. They were built for the contractors, Stone, Harbach & Witt, and have been in continuous service on this road until now, and, so far as can be judged from their present appearance, they are good for several years more.

The passenger cars are 41 feet long and 6½ feet wide, and have a seating capacity for 60 persons. The height between sills and plates is 6 feet. They had originally no raised roofs, and were run without any for 15 years. The siding is put on lengthwise, and plenty of glue was used both inside and out. At first there were no truss-rods, but after the lapse of nearly 20 years, truss-rods were added more for appearance, it is said, than for stiffening the car bodies, which were then as stanch as when they were new. The truss-planks have a slight camber, which is not shown in the engraving, but is very apparent in the cars themselves. The floor framing and truss-planks are ash, and were cut and squared by hand in the adjacent forest, there being no saw-mills at that time in the vicinity. The floors are framed with cross-timbers from sill to sill without longitudinal centre or intermediate sills, and although this method has since been abandoned, it does not seem to have lessened the capacity of these cars for prolonged service. The baggage car is 36 feet long, its other dimensions being the same as the passenger cars. The trucks are what are called square trucks, with a wheel base of 4 ft. 10 in.

The engine was originally called the "Cincinnati," and was built at the Cuyahoga Works for the same contractors, about the same time the cars were built. It has 15x20 inch cylinders, inside connections, hook motion, with riding valve cut-off, and was at first a wood burner, but was altered to a link motion and coal burner.

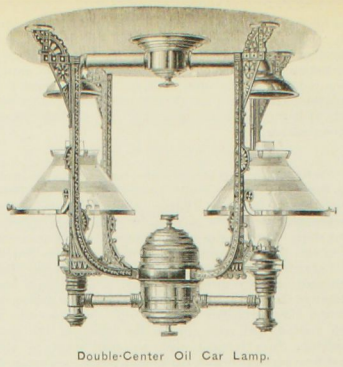
During their long period of service, the cars of this train have several times been off the track, and have more than once been rolled down embankments, but no passengers have ever been killed in them. Mr. Robert Blee, the present Superintendent of the Columbus & Cincinnati Division of the road, began his railroad experience on this train in the capacity of "water-boy," from which position he has been successively advanced to that of brakeman, conductor and division superintendent. The train is still in active service on the road, with no immediate probability of falling into dilapidation and decay. We are not informed as to what extent the cars have been rebuilt by substituting from time to time new material for old in the essential parts of the framing, but assuming that they have not been practically rebuilt, like so many old jackknives with new blades and handles, their remarkable longevity would seem to indicate that the original design, material and workmanship were very good. Very few passenger cars of the best "modern" construction have been built within the past year that are likely to be found in regular service 34 years hence, making all due allowance on the score of better rails and roadbeds. Their superiority as compared with the antique specimens shown in the engraving, consists mainly in their larger dimensions, easier riding qualities, more comfortable seats and other conveniences for passengers, and more elaborate and costly decoration and finish.

THE Harlan & Hollingsworth Company have just completed five handsome day coaches for the New York Central & Hudson River Railroad. Each car is 54 feet in length, 9 feet 6 inches wide and 8 feet 11 inches high with 18 windows on each side and 2 on each end. The window lights are 22×31 inches and are made of fine crystal plate glass. The interiors of the cars are finished in solid mahogany, tastefully carved. The ceilings are of oak wood, handsomely decorated. The cars are furnished with the Buntin seat frames, and the seats are upholstered in crimson and green plush. All the metallic trimmings are of bronze, and the lights in the raised roofs are of richly embossed glass in pivoted sash. Each car is lighted by three double light chandeliers and is fitted up with all the necessary washroom and dressing-room appliances. The heating is by Searles' patent heater with pipes extending along the sides of the cars. They have Miller platforms and Westinghouse automatic brakes in addition to improved double-acting hand brakes. The trucks are six-wheeled, with Paige's steel-tired wheels 42 inches in diameter, and French's elliptic quadruple and coil springs. The roofs are galvanized ferro and have steel capes around the end projections. The painting of the exterior is something of a straw color known among car builders as the New York Central & Hudson River standard. The ornamentation is artistic and elaborate. The Harlan & Hollingsworth Company is also building a lot of handsome dining cars for the same company, a part of which will be completed and shipped at an early date.

ONE of the principal buildings of the Meadow Shops of the Pennsylvania Railroad, near Jersey City, was entirely destroyed by fire on the evening of May 19. The building was used as a cabinet, paint and trimming shop, and was 400 feet long by 150 wide. There were 18 passenger coaches, 1 Pullman car, 1 express car, 4 horse cars and 2 engines in the building, the most of which were destroyed or very much damaged. The loss will be fully covered by the company's insurance fund without drawing on the earnings for the current year.

THE Harlan & Hollingsworth Co., Wilmington, Del., have just completed an officers' car for the Flint & Pere Marquette road. The interior finish is in cherry with mahogany trimmings. The ceiling is white maple beautifully decorated. Like other cars of its class, it contains the usual sleeping, dining and parlor compartments, all of which are luxuriously furnished. The platforms extend the full width of the car, and are inclosed with railings and gates. The length of the car is 60 feet. It has six-wheel trucks, Cowell platforms and buffers, Westinghouse brakes and Paige's 33-inch wheels.

THE four-track system of the Pennsylvania Railroad will be completed between New York and Philadelphia by the 1st of June. Five new locomotives have been put on the road. They have patent steam reversing gear and patent sand boxes. The latter are over the wheels instead of on top of the boilers



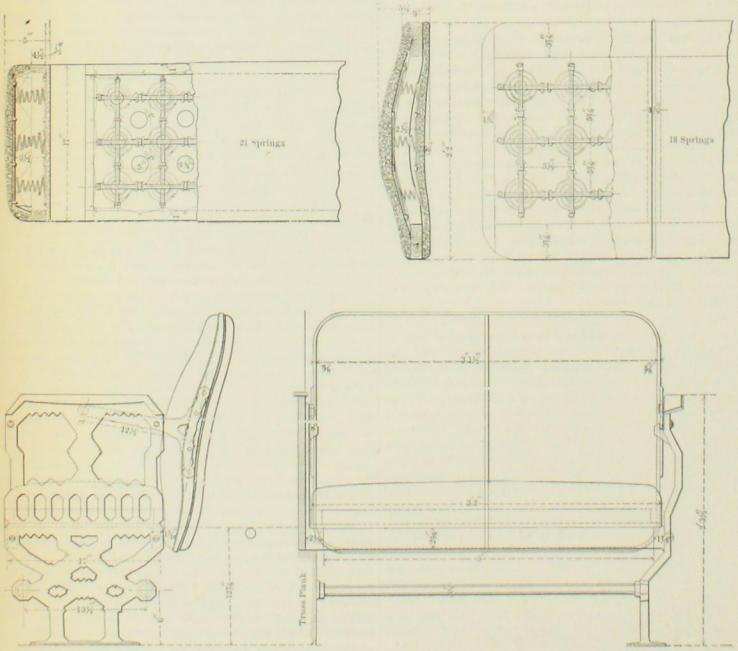
Double-Center Oil Car Lamp.

The cut represents the double center oil lamp used in the standard passenger coaches of the Baltimore & Ohio Railroad. These lamps operate on the "student lamp" principle, the oil in the burner tubes being supplied from the central fount as fast as consumed, thus affording a white and brilliant light for several hours without adjustment, and without charring the wicks. The founts, without the burners, are kept in place by locking-rings, and can be readily detached for filling and cleaning. When inverted in case a car turns over, the oil does not spill, but is confined within the reservoir. These lamps are manufactured by James L. Howard & Co., Hartford, Conn. The cut represents the double-center pattern, No. 167.

MR. GEORGE M. HAIN, the Master Mechanic of the Reading & Columbia Railroad, and brother of Frank Hain, the General Manager of the Manhattan Elevated roads of New York, was killed on the former road on the 16th of May by being crushed under a locomotive which had been thrown from the track by a piece of timber. He was 38 years old and leaves a wife and two children.

THE following figures represent the strength of Manilla rope of the respective diameters, as given :

Diam. in inches.	Breaking load in pounds.	Diam. in inches.	Breaking load in pounds.
¾	4,316	2⅜	36,300
1	6,190	2½	39,900
1 3-32	8,530	2¾	47,000
1¼	11,550	3	50,288
1⅜	14,800	3¼	54,200
1 5-16	18,380	3⅜	61,400
1¾	21,950	3¾	68,550
2	25,500	4	75,500
2 1-16	29,120	4¼	82,800
2¼	32,700		



PASSENGER CAR SEAT—BALTIMORE & OHIO RAILROAD.

Obituary.

In the special illustrated pages of this issue will be found engraved portraits of two men, recently deceased, who have for years past been prominently identified, each in his sphere, with the rolling stock departments of railroads. We give below such particulars of the life and career of each as we have been able to obtain, and which are likely to be of interest to our readers.

HOWARD FRY.

Howard Fry was a native of England, and was only 36 years of age at the time of his death. He began his railroad career by entering the service of the London & Southeastern Railway, where a portion of his time was employed in making experiments pertaining to the combustion of coal in locomotives. In 1867 he came to Canada, and was appointed Locomotive Inspector on the Grand Trunk road, after which he was made Assistant Mechanical Superintendent of the Eastern Division of the road. He continued in this position until 1873, when he entered the service of the Erie Railway Co. as Supervisor of Locomotives. From circumstances growing out of the unsettled state of affairs of the company at that time, he soon resigned his position, and in the following year was appointed Superintendent of Motive Power and Machinery on the Philadelphia & Erie Division of the Pennsylvania road, where he remained until September, 1881, when he was offered a position, with the same title, on the New York, West Shore & Buffalo road, which was then in progress of construction, and needed a person of capacity and experience to design and take charge of its shops and rolling stock equipment. the most of which had yet to be built. The position was one of large responsibility, and the duties which devolved upon the incumbent were unremitting and arduous. That Mr. Fry was equal to the satisfactory performance of the work he had undertaken was evinced by the energy with which he engaged in it. His previous experience from the outset of his career, combined with his admirable personal qualities and habits of thorough investigation in forming his conclusions, peculiarly fitted him for a position in which he could hardly fail to realize, in time, the rewards and possibilities of a brilliant future.

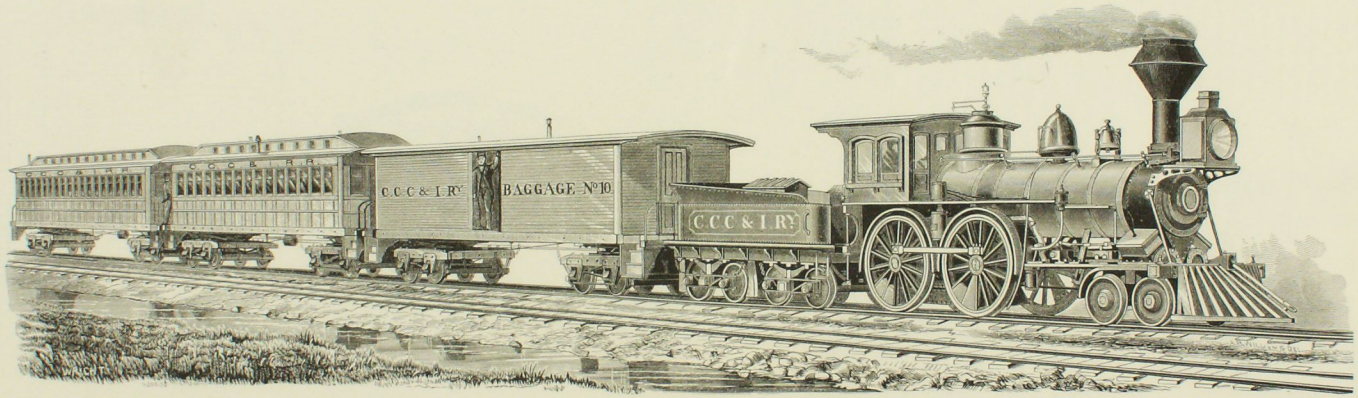
He was for many years an efficient member of the Master Mechanics' and Master Car-Builders' Associations, in the discussions of which he took a prominent part, and was listened to with the marked attention which his practical acquaintance with the subjects discussed, and the faculty which he possessed of presenting his views concisely and clearly, never failed to command. He took a lively interest in the recent work of reorganizing the Car-Builders' Association, and did much to bring it to a satisfactory conclusion. His aid and counsel in dealing with the many perplexing and difficult questions to come up at the annual meeting this month at Chicago will be sorely missed, and the more so as he was at the head of two important committees from which reports are expected to be made.

Mr. Fry was fatally injured in a collision which occurred on the 27th of April, between a freight and a passenger train, near Bellevue, Mich., on the Chicago & Grand Trunk Railway. The passenger train was stopped by the bursting of the air-brake hose, and the freight train, which was an "extra," ran into the rear of the passenger train, telescoping two Pullman cars, in one of which was Mr. Fry, lying in an upper berth. He lived about six hours after the accident. He was buried in Englewood, N. J., where he had been living, and leaves a wife and four children.

ALPHEUS GLEASON.

Mr. Gleason, whose death took place on the 6th of May, was in the sixty-fourth year of his age, having been born in Bedford, Mass., March 17, 1820. Of the nature of his pursuits in early manhood we are not informed. At the age of 29 he entered the service of the Old Colony Railroad Company, whose road then extended only from Boston to Plymouth, a distance of 37 miles. He was from the first employed in the car shops, and at the end of four years had developed such a capacity for his duties that he received the appointment of Master Car-Builder, and assumed the chief control of the car department of the road, a position which he continued to hold until the day of his death, and embracing a period of 34 years. Although deprived of the advantages which a greater diversity of experience in his vocation might have secured to him, he fully kept up with the progressive improvements in car construction. Nearly all the cars of the road during his long service were built under his direction, and as the passenger traffic of the line was the most important, as compared with freight, his aim was to furnish the company and its patrons with commodious, handsome and easy-riding cars that would compare favorably with those of other and more ambitious roads, and in this he fully succeeded. Of his integrity, capacity, close application and correct business habits, his long and acceptable service is a sufficient testimonial. His quiet, affable and unobtrusive manners endeared him to all who were brought in contact with him in social or business intercourse. He was a valued member of the Master Car-Builders' Association, having been connected with it since its organization, and manifesting at all times a lively interest in its growth and capacity for usefulness. Like many others included in the membership, he was not conspicuous as a talker, but his views upon every subject that came up were practical, well-considered and sound, and received the deference from his associates to which they were entitled as the results of long experience. At the reorganization of the Association at Niagara Falls in October last he was present as a "representative" member to represent the interests of the Old Colony Railroad. He was ill about four weeks, and was apparently in a fair way of recovery until the day of his death. He leaves a widow, one son and two daughters.

THE SOUTHERN EXPOSITION of natural products, machinery, manufactures, transportion, music, literature and art, will be opened at Louisville, Ky., August 1, and continue 100 days. The dimensions of the main building will be 900×600 feet, and will cover 13 acres of ground. There will be two concerts each day by an orchestra of superior excellence. The buildings and grounds will be lighted with electricity, and a hall will be devoted to scientific lectures and experimental tests.

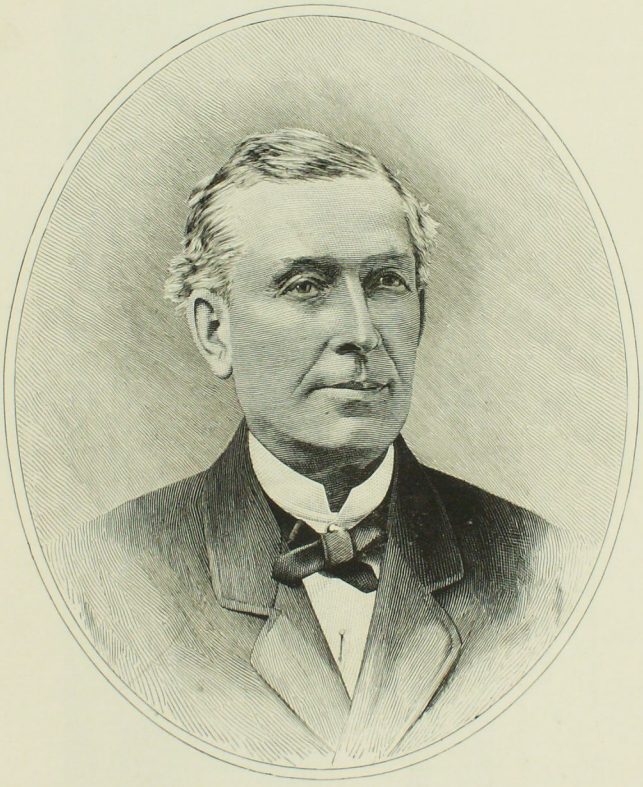


PASSENGER ENGINE, TENDER AND TRAIN OF CARS.

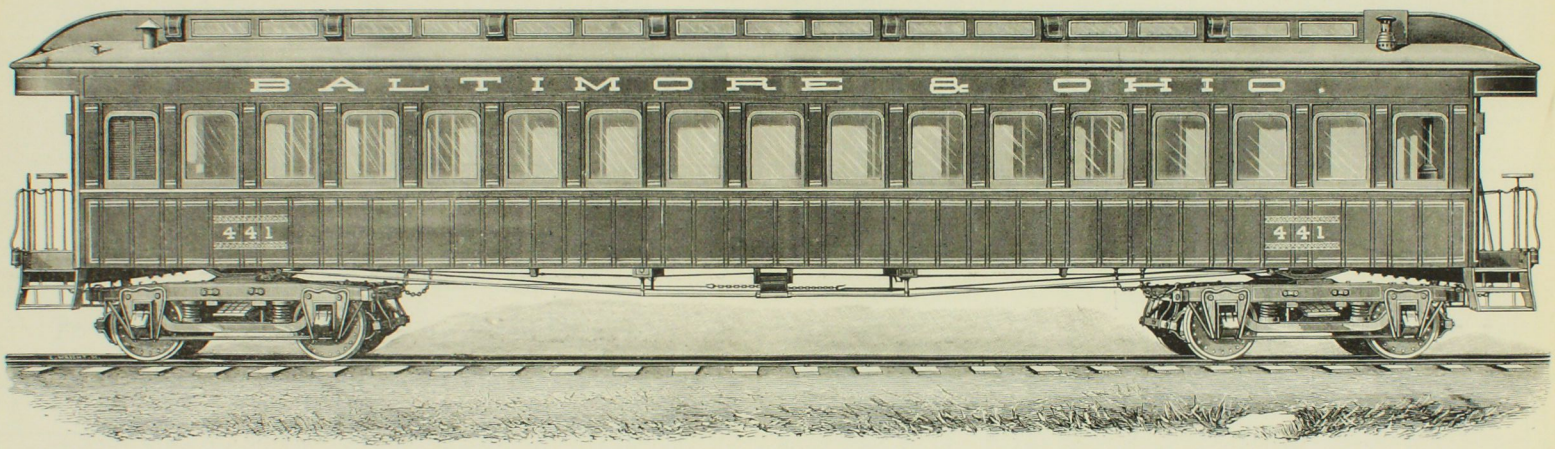
Built in 1849-50, for the Cleveland, Columbus & Cincinnati Railroad, and now running on the Cleveland, Columbus, Cincinnati & Indianapolis Railroad.

Yours very Truly
Howard Ely

Late Superintendent of Motive Power and Machinery of the New York, West Shore & Buffalo Railroad.

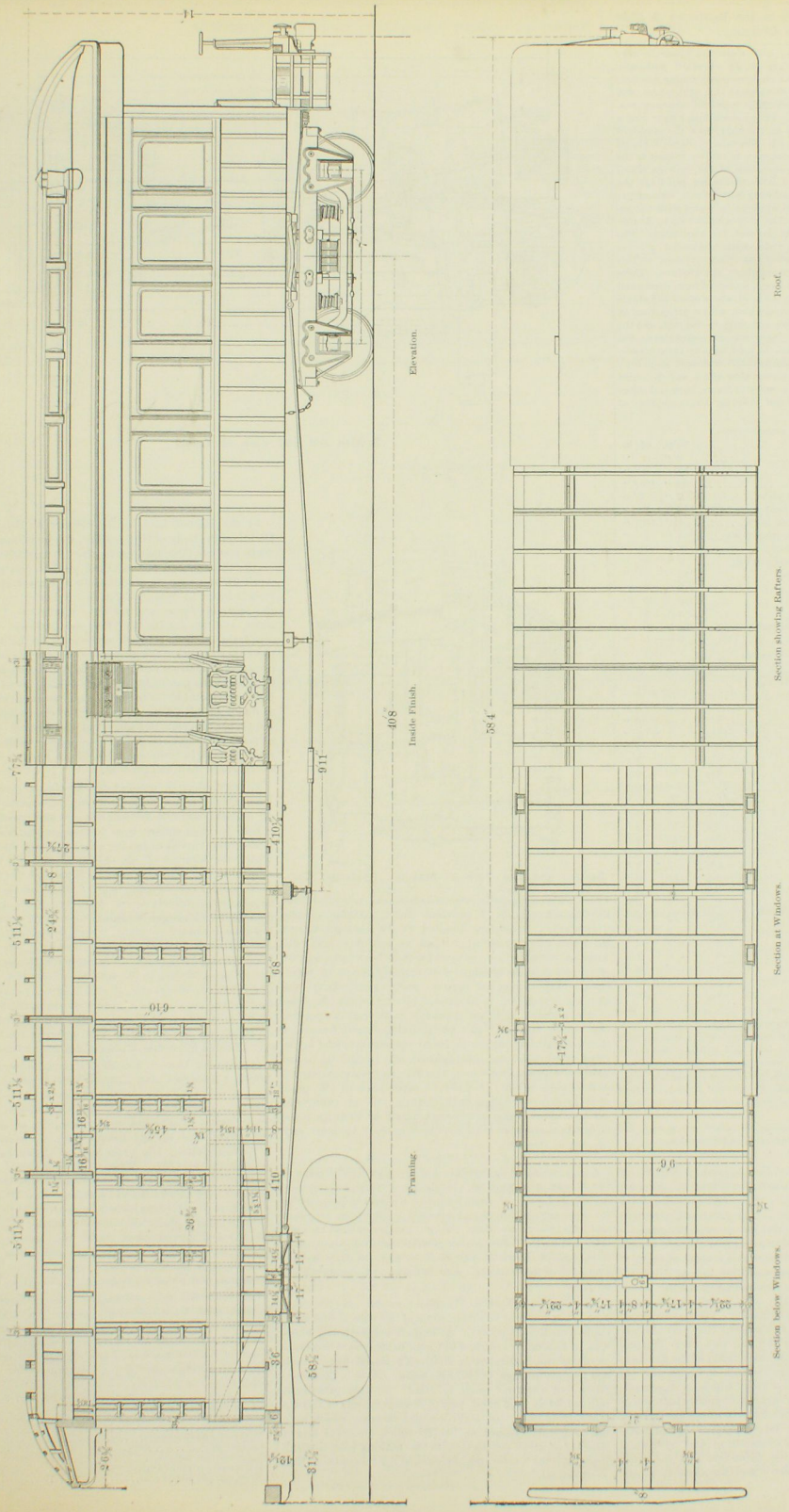


Late Master Car-Builder of the Old Colony Railroad.



STANDARD PASSENGER CAR—BALTIMORE & OHIO RAILROAD.

Built at the Mount Clare Shops, Baltimore, Md.; L. Packard, Master Car-Builder.



STANDARD PASSENGER CAR—BALTIMORE & OHIO RAILROAD.

Built at the Mount Clare Shops, Baltimore, Md.—L. Packard, Master Car-Builder.

Standard Passenger Coach of the Baltimore & Ohio Railroad Company.

The elaborate engravings we give elsewhere illustrate very fully the style and construction of the standard passenger coaches of this road, some of which have been running for more than a year. The principal dimensions, size of timbers and some of the details in which they differ from the ordinary construction will be found below. They are six feet longer, and a fraction over four inches wider in the body than the standard coaches of the Pennsylvania road. The interior finish is also of a different material, and the same may be said in respect to the style of decoration. With the exception of the ceilings, which are of decorated oak relieved with mahogany moldings, the entire inside finish is in solid mahogny with bronze trimmings. The space between the floor and windows is sealed with narrow strips running up and down. The door-windows have double sashes, and the upper one can be lowered for ventilation. The window panels are 10⅛ in. wide, with channeled grooves in rectangular form crossing at the corners. This style of ornament is also introduced above the windows. There are end ventilators in the clear-story, protected from sparks and cinders by wire screens under the hood, also a small adjustable ventilator over each of the end windows, with a wire screen on the outside. Howard ventilators are used in the roof, and the dome lights are made fast. There are six nickel-plated and gilded parcel-racks on a side, and the lighting is by three double-burner student-lamps. In the ornamental treatment there is no attempt at mere display or straining after effect, and the result is a prevailing harmony and a unity of forms, lines and colors that is not only satisfactory and pleasing, but suggestive of good, honest, intelligent work.

GENERAL DIMENSIONS.

Length of car body over sills	52 ft.	6¾ in.
Width of car body over sills	9 "	6 "
Length of car over platforms	58 "	4 "
Length of car inside	51 "	10½ "
Height from top of sill to top of plate	7 "	⅛ "
Height, bottom of sill to top of clear-story	10 "	5 "
Width between tops of clear-story posts	4 "	10½ "
Width between bottoms of clear-story posts	5 "	1 "
Width of clear-story, out to out	6 "	1⅜ "
Width of clear-story inside between ceiling	5 "	2½ "
Width of car over crown molding	10 "	1 "
Center to center of windows	3 "	0 "
Size of window glass	22 "	30 "
Width of door opening	2 ft.	3 "
Height of top of car above top of rail	14 "	0 "
Wheel base of trucks	7 "	0 "

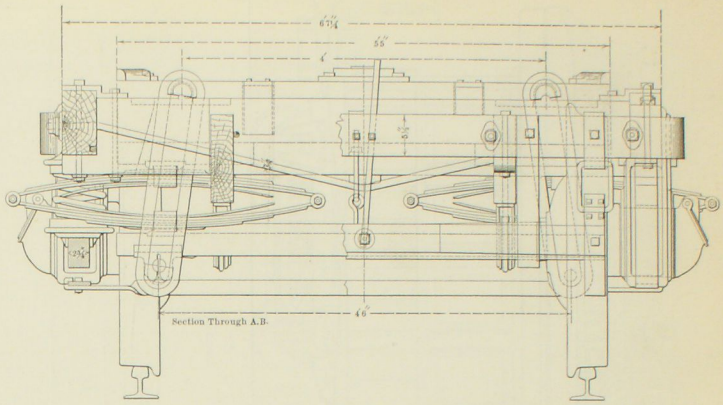
SIZE OF TIMBERS.

2 Side sills	yellow pine	5½ × 8	in. ×	53 ft.	0 in.
4 Intermediate and center sills	yellow pine	4 × 7	" ×	52 "	0 "
2 End sills	yellow pine	6 × 8	" ×	9 "	6 "
2 Tie timbers	"	4½ × 8	" ×	9 "	6 "
4 Lookouts	"	4 × 12½	" ×	7 "	2 "
4 Lookouts	oak	3½ × 12	" ×	7 "	2 "
2 Horn timbers	"	7⅛ × 8¼	" ×	8 "	7 "
2 Side plates	yellow pine	2½ × 5⅛	" ×	56 "	0 "
2 End plates	"	2¾ × 10	" ×	9 "	6 "
2 Truss planks	"	2½ × 11⅜	" ×	52 "	0 "
4 Truss planks	"	2 × 11½	" ×	3 "	2 "
2 Belt rails	ash	2¾ × 3⅝	" ×	15 "	3 "
4 Belt rails	"	2¾ × 3⅝	" ×	13 "	3 "
2 Belt rails	"	2¾ × 3⅝	" ×	14 "	0 "
4 Belt rails	"	2¾ × 3⅝	" ×	3 "	0 "
4 Window sills	"	1¾ × 5⅛	" ×	10 "	0 "
2 Window sills	"	1¾ × 5⅛	" ×	11 "	0 "
2 Window sills	"	1¾ × 5⅛	" ×	9 "	6 "
2 Window sills	"	1¾ × 5⅛	" ×	12 "	6 "
4 Window sills	"	1¾ × 5⅛	" ×	3 "	0 "
16 Distance blocks	yellow pine	3 × 8	" ×	2 "	2 "
4 Distance blocks	"	4 × 8	" ×	2 "	2 "
8 Distance blocks	"	3 × 7¼	" ×	2 "	2 "
16 Distance blocks	"	3 × 8	" ×	1 "	10 "
8 Distance blocks	"	3 × 7¼	" ×	1 "	10 "

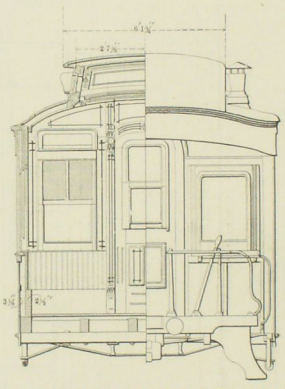
The side sills are tenoned into end sills, and the two are secured together by ⅝ × 6 inch angle irons bolted with two ⅝ inch bolts to each sill. The car-body rests upon double iron bolsters of 4 × ⅜ inch iron, welded at the ends, and bolted to the frame by eight ⅝ inch bolts. From truss-planks to window-caps are placed boards 14 inches in width, gained on to window posts ⅝ of an inch, and firmly glued and secured to same, which makes a continuous edge-truss from window caps to main sills.

The cars have four-wheel trucks, of which we give a detailed illustration showing construction and dimensions.

Report of the Proceedings of the Adjourned Meeting of the Master Car-Builders' Association, held at Niagara Falls, Oct. 10, 11 *and* 12, 1882: This report, in its form and general arrangement, is a very great improvement upon the reports of the regular meetings of the Association that have been published in years past. In this respect it is a very appropriate and desirable feature of the new departure which was consummated last fall at Niagara, and it is to be hoped that the proceedings of future meetings will be published in the same form, and be edited with the same care and discrimination. The report proper comprises substantially the same matter that has already been published in the CAR-BUILDER and other railway journals. The discussions on the revision of the constitution of the Association are given in full, and with the aid of the very complete analytical index which is appended, the views of each member upon any particular topic or phase of the subject can be referred to without loss of time. The report also contains a large quantity of collateral matter, including the revised constitution and by-laws, a list of officers and executive members, and the three classes of active representative and associate members.



Section and End View of Truck.



Section and End View of Standard Passenger Car.

There is also a carefully prepared statement, compiled from the annual reports of previous years, of the various "standards" heretofore adopted by the Association, and the action taken at different times in regard to many details of construction, but which has been lost sight of or forgotten in the absence of some ready means of reference. This appended matter, more particularly the adopted standards, is illustrated by engravings, the most of which have heretofore appeared in the railway papers, but which are none the less an indispensable feature of this publication, which is in all respects a model in its form, typography and arrangement, and should be in the hands of every railroad man who is in any way interested in the doings of the Car-Builders' Association in the past, or its prospective doings in the future. We are unable to say how many copies have been printed, or what the price is, but presume that both have been gauged to meet any reasonable demand.

AT a meeting of the creditors of the Cleveland Bridge & Car Works, held April 26, a resolution was adopted requesting the assignees of said company to sell the property of the company, both real and personal, except book accounts and bills receivable, when enough can be realized by such sales and by the collections of accounts and bills receivable, to pay the creditors 50 per cent. or more on their claims, exclusive of interest, such sale or sales to be made within 60 days.

THE Cayuta Wheel & Foundry Company, of Waverly, N. Y., has recently received some of its wheels that have made a creditable record. A 26-inch engine truck wheel was, in February, returned to them, having been in service on one of the Pennsylvania Railroad's leased lines, which has made a mileage of 107,322 miles. It is in good condition, but worn too small to mate. Another prominent railroad lately took out a pair of 30-inch wheels of Cayuta make, from under an eight-wheeled caboose, which have the remarkable record of 248,000 miles. Several sets of wheels had given out under this car (making long through trips), and the master mechanic asked for "something that would stand."

AT the inquest held by the coroner at Battle Creek, Mich., on the body of Howard Fry, the jury found that his death resulted from injuries received in a collision of trains on the Chicago and Grand Trunk road on the morning of April 27, and that such collision was caused by an extra freight train, in charge of Conductor Beebe, running into the rear end of passenger train No. 6, called the Pacific Express, and telescoping the two rear Pullman cars; that said train had been stopped on the track by the bursting of the hose connecting the air-brakes with the engine, causing the automatic to set the brakes; and furthermore, that the flagman of the passenger train was delinquent in not going back as fast and as far to stop the approaching freight train as he might have done; also, that the conductor failed to use proper diligence in seeing that the flagman went back as fast and as far as he should have done; and furthermore that the freight train was at the time moving faster on a down grade than was prudent.

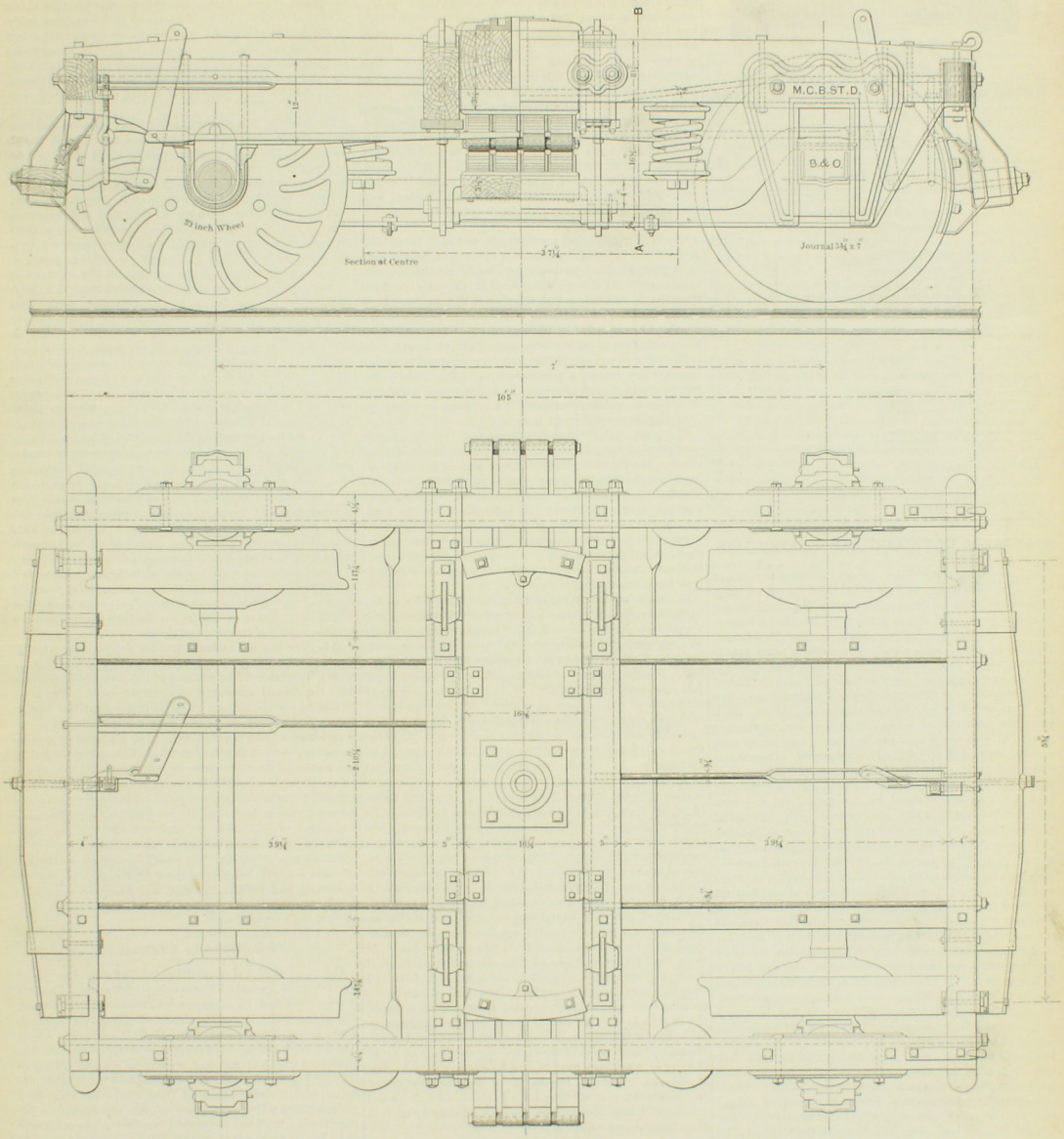
A VERY effective method for keeping a record of the whereabouts and condition of engines consists in ruling off a blackboard into vertical columns and crosslines, with a hole in each square thus formed (except those in the first column) bored to receive a movable peg, on the end of which the number of the engine is printed. Upon each square of the left-hand column is painted the number of each engine, commencing with "One" at the top, and running consecutively down. At the top of the next column is printed "Passenger Engines," and in succession at the top of each toward the right, "Freight Engines," "Diameter of Drivers," "Diameter of Cylinders," "Stroke," "In Shop for Light Repairs," "In Shop for Heavy Repairs," and so on, according to the needed information in respect to service, condition, etc., of each engine. In this way, by keeping the pegs in their proper location, the blackboard shows at a glance what each engine is doing, where it is, its condition, and so forth. The different road divisions are indicated by means of pegs of different colors.

IN 1882 the Denver and Rio Grande Railway carried 446,261 passengers and 1,151,330 tons of freight. At the close of that year there were 1,282 miles of road in operation or in operating condition, and 423 miles in process of construction. The rolling stock in service at the close of the year footed up 222 locomotives, 161 passenger, and 5,771 freight cars. The extension to Ogden has swelled the mileage to 1,643. When it is considered that this company did not begin its work until 1870, the progress achieved in so short a time is striking. Few if any roads in the new or old world have been confronted by such formidable natural obstacles, but every barrier that unfavorable physical surroundings could raise has been broken down. It is doubtful whether any railroad in the world runs through more impressive scenery than the lofty mountains and picturesque gorges traversed by this line.

THE following is a statement of the performance of a non-extended front passenger engine on the Norfolk Southern Railroad. The engine has 18×22 cylinders, and was built at the Baldwin Locomotive Works. During the month of March it ran 4,077 miles, making 28 stops per daily trip, and hauling three or four cars each trip. Road not ballasted:

Tons of coal consumed	50.89
Cost per mile, run in cents:	
Coal	5.27
Maintenance	1.54
Engineer and fireman	2.82
Oil and waste	.40
Total cost per mile run	10.03
Miles run per pint of oil	15.21
Miles run per ton of coal	80.15

STANDARD FOUR-WHEEL PASSENGER TRUCK—BALTIMORE & OHIO RAILROAD.



2 Wheel timbers	4½	× 8½	in. × 10	ft. 5	in
2 Transoms	5	× 10	" × 6	" 7	"
4 Brackets	3	× 12	" × 4	" 6¼	"
2 End pieces	4	× 5½	" × 7	" 1	"
2 brake beam	3½	× 6¼	" × 5	" 4½	"
1 Spring plank	3½	× 16½	" × 5	" 5	"
1 Bolster	8	× 16½	" × 5	" 5	"
2 Bolster blocks	3½	× 16½	" × 1	" 6	"

MR. JOHN ORTTON, for several years Mechanical and Car Superintendent of the Canada Southern Railway, has been appointed Master Mechanic of the Eastern Division of the New York Central Railroad, with headquarters at West Albany Machine Shops, the appointment to take effect June 1. Mr. Ortton is well known as a capable railroad mechanic, and as a prominent member of the Master Mechanics' and Car-Builders' Associations.

THE new car and machine shops of the Chicago & Alton road, at Bloomington Ill., will be constructed entirely of stone and iron. There will be 18 locomotive pits, and two traveling cranes with a lifting capacity of 22½ tons each. The shops are expected to be furnished by the 1st of February, 1884.

THE Ohio Falls Car Co., at Jeffersonville, Ind., are building ten passenger coaches for the Louisville and Nashville road, to meet the requirements of travel incident to the Southern Exposition at Louisville, in August next.

THE shops of the Cincinnati, Hamilton & Dayton road, at Lima, O., built five new engines during the year ending March 31. Four of these had 17×24 cylinders, two of them had 5 ft., and two 5½ ft. drivers. The other was a Mogul switching engine. Five engines are in the shops for a general overhauling. The standard reamer and templet system is very much used considering the diversity in the styles of engines on the road. A very compact and simple boiler-punch is also used. It is home-made and of the hydraulic type, and occupies but two or three feet of floor space. It is driven from the main shaft and will punch, it is said, all the rivet holes in the flange of a front steel flue-sheet in 25 minutes. Mr. Black, the General Master Mechanic, has done away with the side-joints of the outside fire-box sheet, making it one solid sheet. Little is done in the car department, the main car shops being at Cincinnati. There were built here last year, however, 66 freight cars and a baggage car.

THE HORTON CAR CHAIR CO. has been organized, at Kansas City, Mo., with a capital of $200,000, in shares of $100 each. The officers are: Wallace Pratt, President; N. N. Horton, Vice-President and Treasurer; W. J. Ferry, Secretary; also a board of seven directors. The company has been formed for the purpose of manufacturing the Horton reclining car chairs, dental and surgical chairs, etc. Grounds will be purchased and extensive shops erected immediately.

SOME of the cars that are to run on the East River Bridge have arrived and will soon be in service. There are 24 of them in all. They are similar in style to those on the elevated roads, but are six inches wider. Twenty of them are 39 ft. 3½ in. long, costing $3,465 each, and the remaining four, 27 ft. 8 in. long, and costing $2,865 each. They are all finished inside with mahogany and maple and have cane seats; at each end are double sliding doors, and the platforms have spring gates. Both hand and air brakes are to be used. The reservoirs will be charged by the shunting engines used at the termini of the bridge for shifting the cars. The pressure will be indicated by a gauge in each car.

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STANDARDS IN FREIGHT CAR CONSTRUCTION.

In considering this subject it is not necessary to speak of the many advantages to be derived from the use of interchangeable parts in freight car construction. These advantages have been dwelt upon until they have become stale from repetition. The question now is: To what extent is the use of such standard or uniform parts practicable, provided they can be designed so as to meet in a satisfactory way the present requirements of freight cars and freight traffic? For years past the Car-Builders' Association has been wrestling with this question of standards. Each year the necessity of doing something has been more urgent in consequence of the increasing number of cars and the amount of freight to be transported. The various plans and devices that have been recommended from time to time by the Association, under its old organization, have been but partially adopted by the roads, and the new organization finds itself confronted with the same problem, beset as it is with all its former difficulties, and several new ones besides, which are of more recent origin. The Association, it may be said, has hitherto been powerless to do any thing but recommend whatever a majority of its members could agree to recommend and there its responsiblity ended. But now its relations with the roads are somewhat different from what they were. At the annual meeting in Chicago this month, it is probable that members will be present with authority to represent railway companies that own in the aggregate upwards of 300,000 cars. This representative element imposes upon the Association a seeming, if not an actual, responsibility which it did not have before. We say seeming, because a real responsibility implies a forfeiture of reputation, money or something intrinsically valuable, if the work to be done is not done, or turns out to be practically a failure. It is true that the members collectively, including representative members who vote in the matter of standards on the basis of cars owned by their respective companies, are not under bonds to produce a standard truck or a standard any thing else, still less can they enforce its use on the roads. But they are, nevertheless, each and all morally bound to do their best to bring about such a result, and this is all there is of the assumed or imputed responsibility. After the thing is simmered down, the new organization differs in this respect but little from the old one. Standards of construction or practice can be adopted by a two-thirds vote of all the members, but the action of the Association is not binding upon any of its members or the roads represented in it.

The difficulty, however, does not lie in any adjustment of the responsibility, but in the mechanical conditions with which the Association and the roads have to deal, and which are inherent in the existing railway practice. It is idle to talk of standards as long as there is no assured basis of stability upon which they can rest and be maintained. If the basis is changeable from year to year, so will be the standards which the Association may vote to establish, in case they are adopted and used. A standard, in its general signification, is a rule or model established by authority or custom. But in respect to the parts of freight cars, it is clear that nothing in their construction can be fixed and unvarying so long as there is no absolute limit to the maximum weight of loads they are to carry. As the freight traffic of the roads is now managed, the maximum car load is the basis which necessarily regulates the construction. The construction don't regulate the basis, or, at all events, it is not doing it at the present time. It is no exaggeration to say that within the past ten years freight car loads have been increased 15 tons, and according to what was said, by men who ought to know, at the April meeting of the Car-Builders' Club, as reported elsewhere, this increase is likely to be doubled in the next ten years. This, of course, will play havoc with the standards that are suited to past or even present requirements, whether they relate to the simpler subordinate details or to trucks and car bodies. The talk now is not so much of standards adapted to present as to future conditions. It is the *coming* standard that claims attention, and in the light of experience the forecast is a wise one. Ten years ago the present so-called standard axle was agreed upon as a compromise between the conservative and progressive views of car-builders. The great majority of railroad men were frightened at its formidable proportions, but the requirements of freight traffic have by degrees educated them up to it, until now the requirements are if any thing a little ahead of the axle, and the question is seriously asked whether it will not have to be made stronger and heavier, or in other words, cease to be a standard before it has really become one. The somewhat Hibernian suggestion has been made that it would have been better if twe standards had been adopted in 1873, a conservative one and a progressive one. The diverse elements would in such case have had something definite to divide upon, and the result would have been a nearer approximation to uniformity in sizes.

The truth is, that the mania for standards in freight car construction with the view of greater economy in making repairs, has diverted attention from the increase of car loads and the effect of such increase on the utility of such standards so far as they form a part of the drawing and running gear. If a limit could be fixed for the load, whether 30, or 40, or even 50 tons, there would be a basis upon which to work, although it might necessitate radical changes in the present structure of cars from wheels to roof. But unfortunately there is no restriction upon overloading and things must take their course.

Many car-builders have for years had a kind of dreamy expectation that at some time or other all railway men would agree in opinion, and that a freight car truck would be forthcoming of such mechanical completeness as to supersede all others, and so put an end to the existing diversity. But the prospect of realizing this expectation is not just now very encouraging. Nobody knows just what materials, or what forms, proportions or combinations of materials are requisite for a truck that will be so perfect as to defy any attempts to improve it. The most important members of the structure are the wheels. Instead of uniformity in their manufacture, the diversities and irregularities are almost endless. There is trouble with the form of flange, width of tread and width of wheel, they are not round nor balanced, there is no standard gauge, the hub-bore is not concentric with the circumference, there is no uniform point on the treads for measuring, and the utility of coning the treads is involved in great uncertainty. If the wheels are imperfect, the rest of the structure will share the imperfection. A truck, to stand any chance of being accepted as a standard, must not only be the best in design and workmanship, but every railway man must know it is the best, so there will be no inducement to build any other kind. If there were to-day a truck of this description in some of the track-yards, with no mark to distinguish it from the general assortment, who could go and pick it out, or determine with certainty by a careful inspection whether it was or was not the best? Those who are inclined to be sanguine that the millenium of standards and interchangeableness is about to dawn, should bear in mind that so long as every road is free to adopt and use what it pleases, it will be impossible to enforce the use of standards that put a veto on all subsequent improvements, and stop the process of development by saying, thus far and no farther.

THE LUBRICATION OF CAR AXLE JOURNALS.

Scientific research and investigation have thus far made but small progress towards clearing up the mysteries of lubrication, and yet it must be admitted that the millions of axle journals in constant service on our railways, carry their loads and make their accustomed mileage without serious trouble from frictional heating. There are hot boxes, to be sure, but as a rule very few of them are to be found on "our" road. They are always the most troublesome on some "other" road. And yet, when the subject is discussed at car-builders meetings, instead of a wail of dispair on account of the apparent impossibility of ever getting rid of the trouble, we almost always hear statements in regard to the lubricating virtues of certain oils or mixtures, that are as surprising as they are encouraging and satisfactory. Thousands of miles, according to these statements, are run with one oiling, there are no hot boxes, the lubricant takes care of itself and requires no attention, and the cost is the merest trifle. The test, moreover, is a practical one. There is no suspicious scientific odor of the laboratory about it, and the wonder is that these particular lubricants are not at once adopted by acclamation, made "standard" and "interchangeable," and so have done with the plague of hot boxes. The next time the subject comes up every thing is as chaotic as ever; or, if a learned professor from some of the technical schools, who has given special attention to the subject, undertakes to shed the light of experiment and analysis upon it, he frankly admits, as Professor Ordway did at a recent meeting of the New England Railroad Club, that he don't understand it, and don't believe anybody else does.

The truth is, that all the existing knowledge on this subject is fragmentary and indefinite, and therefore it is not scientific. The analysis of the various kinds of oils shows a great difference in their lubricating properties, and these are dependent upon a host of other things, fluidity, body, viscosity, capillarity, a tendency to gum, congeal, vaporize, take fire, etc. Then there are the mixtures and adulterations by manufacturers and dealers, so various and so difficult to detect, the varieties of machinery and the conditions of its lubrication in respect to weight, pressure, velocity, temperature and the natures of the surfaces in contact; and aside from these, the element of friction itself, apparently so simple, and yet attended with phenomena so difficult to account for in a satisfactory way. In view of all this, the diversity of opinion and practice in the lubrication of car journals is not very surprising. It has been said by an oil manufacturer that what is the best lubricant for railway purposes will never be determined, because individual opinion will always prevent it. Nevertheless, what railway men want to know is, not chemical affinities, molecular theories, specific gravities, and a host of curious things disclosed by the refining and analyzing processes of the laboratory under the direction of scientific experts, but the particular oil, ingredient or mixture that will make an ordinary car journal run cool in ordinary service, with due regard to economy in consumption and waste. Leaving all other machinery to take care of itself, and considering a freight-car axle journal alone—its dimensions, material, strength, maximum weight to be carried, extremes of temperature, etc., it would seem that with the aid of technical science and experimental testing, in connection with forty years of practical experience in railway operation, some conclusion might be arrived at of a more satisfactory nature than the present unsettled condition of things.

It is clear that the ultimate test for determining what is the best lubricant for car journals—assuming that there is such a lubricant—is the running of the journals themselves with their usual loads and at ordinary speed. This kind of testing may be expensive, but it is the final test and is being made every day. No matter what the lubricant may be, whether it is very simple in its elements or complicated and very much patented, its merits must be judged by the results of practical use. In case it satisfactorily meets all the requirements, the trouble is to keep its quality uniform, a thing which must depend on the integrity of the makers. Laboratory tests are very well as a preliminary indication of what may be expected, but they are little more than indications, except so far as they are useful in detecting adulterations. The whole subject, in the absence of more positive knowledge than now exists, is very bewildering and perplexing, and will probably remain so until investigation and research shall throw more light upon it than we now have.

THE CHICAGO EXPOSITION.

The great National Exposition of Railway Appliances was formally opened on the evening of May 24. The exercises consisted of a prayer by Professor David Swing, and addresses by Mayor Harrison, of Chicago, Vice-President Aaron French and Hon. E. B. Washburn. About five thousand people were present, and the occasion was enlivened with a program of orchestral music. Owing to the late arrival of some of the machinery and other exhibits, and the interruption of work on the buildings by a violent storm a few days previous, the arrangements for the opening were not as complete as they might otherwise have been. Only a few of the gallery exhibits were in place, the electric railway was not ready, and the lighting was mostly by gas. These drawbacks, however, will be only temporary, and in a few days every thing will be ready for the inspection of visitors, who can then see and judge for themselves whether the magnitude of the display has been overrated by representations made in advance. If the published list of exhibitors and articles entered for exhibition is any criterion, the expectations of the most sanguine will be more than realized. Railway men will see within an area of a few acres all the striking features of the vast system in its earlier and later development, while the more intelligent portion of the general public will acquire a better knowledge of the true inwardness of railway operation than it has ever had before. If the Exposition is looked upon as a mere show-room for the display of merchantable wares, or as a place for holiday recreation, instead of a much needed school of instruction in mechanical knowledge, the time, money and labor expended upon it will to that extent have been wasted. We can not but think that the day announced for closing the exhibition (June 23) is quite too soon, and that it might be extended another month with advantage to all concerned, unless there are controlling reasons to the contrary, of which we are not advised.

EIGHT AND TEN-WHEEL ENGINES.

A writer in one of the railway journals says that the Consolidation engines of the New York, West Shore & Buffalo road will pull a train of 70 freight cars with 20 tons of load in each car, while the 8-wheel engines of the New York Central road will pull only 40 cars with the same load per car. We quote from memory, and cannot give the words exactly. As the comparative economy of these two classes of engines is becoming a question of some importance at the present stage of railway development, it can be discussed with profit and advantage. Railway men who have had experience with Consolidation or Mogul engines on comparatively level roads like the New York Central, know very well that the 8-wheel engines are the most economical for transporting freight, notwithstanding they haul lighter trains, and for these reasons: They cost, in the first place, from $2,000 to $5,000 less than the heavy ones; they will travel faster with their trains, and with far greater safety to themselves and their loads; they will pull out fewer draw-bars, prolong the life of cars a large percentage, cause fifty per cent. less damage to the track by the spreading and breaking of rails, to say nothing of the increased number of accidents from these causes upon roads where the Consolidations and Moguls with their heavy trains are used, and with the increased expenditure upon the road-bed which necessarily results. The hazard of running fast trains on such roads, especially if the tracks are laid with steel rails and the winters are severe, is greatly increased, even if the track-walkers are multiplied and extra precautions used. On a road having an equal number of the two classes of engines, from two to four of the 10-wheeled ones will be ditched to one of the 8-wheeled; and when one of the former gets off the track, it costs more in proportion to its tractive power to get it on again, its running expenses are much more, it is more difficult to overhaul and harder to keep in trim, it has more hot pins, more tire expenses, and a heavier fire-box account. However advantageous and economical these monster freight engines may seem to be theoretically, an experience of ten years with both classes on roads with average grades will show that the 8-wheel engines haul their loads with a lighter expenditure than any other style of engine that has yet been built or is likely to be built.

THE ELEVATED RAILWAYS OF NEW YORK.

Whatever may be said about monopoly, high fares and watered stock, there is no local system of railways in the world that furnishes such admirable facilities for passenger transportation as the four lines of elevated roads in the City of New York. Since the trains commenced running on the two lines on the west side, nearly six years ago, the traffic has steadily increased, until in the earlier and later hours of the day it is equal to the capacity of the trains, which run at intervals as short as safety will permit. The number of passengers carried on all the lines, comprising 32 miles of road, during the half year ending March 31, was over 46,000,000, and the whole number for the current year will probably fall but little short of 100,000,000. There can be no stronger evidence than this of the nature of the service rendered by these roads, not only to the vast population of the city proper but to immense throngs of people from the suburban towns on every side, who come and go every day, and at all hours of the day. The development of local passenger travel in the city within these few years has been tremendous. The time will never come when its rapid transit facilities will be less than they now are, at least, not until some New Zealand artist shall perch himself on one of the crumbling piers of the Great Bridge to do a little sketching. It is even now a serious question how long these elevated structures, with all the trains that can be moved upon them, will be sufficient for the requirements of travel over and above the capacities of the present surface roads. It has taken forty years for the city to outgrow the capacity of the Croton Aqueduct, and it is possible that in less time than that the present surface and elevated lines will be supplemented by a half a dozen under ground roads, in order to meet the growing demand for urban transportation.

The fares on the elevated roads are five cents during three hours in the morning and evening, which is the same as on the surface roads, and were it not that the cars on both are at such times equally crowded, it might be said that passengers have their choice between the two. The superiority of the former, however, are an ample compensation for the ten-cent fares during the rest of the day. The speed of the trains, the capacious, easy-riding cars well warmed and lighted, the freedom from obstruction, comfortable stations and waiting-rooms, with gate and platform men charged with duties conducive to the safety and convenience of passengers, all contrast strongly with the absence of these most desirable things in the ordinary street car service. There is also a time schedule for all distances, which is adhered to with regularity and precision, and the average distance which a passenger is carried is five times what it is on the horse cars. These considerations, with the vast amount of time saved to millions of the business and working classes by quick transit, are certainly a sufficient compensation fo the difference in fares during the intervening hours between morning and evening. There have been accidents, of course, involving injuries and loss of life, but these are inseparable from all modes of public or private conveyance. But, taking the casualties on these elevated roads, that have been fairly due to lax discipline and defects in the management, and they amount to hardly an appreciable percentage of the whole number of passengers carried and the number of persons employed in the service. The worst thing that has been apprehended, the precipitation of a car full of passengers from the elevated tracks into the street below, has not once occurred in all these years, although the operation of the new system was for a time experimental to a considerable extent, and subject to possible mishaps that could not be effectively guarded against except by experience.

THE EAST RIVER BRIDGE.

The idea of a huge suspension bridge across the East River, to connect the cities of New York and Brooklyn, which began to be dimly shadowed forth fifty years ago, is at last practically realized, and the whole world is apprised of the dimensions and magnitude of the amazing structure. Its formal opening for traffic took place on the 24th of May with appropriate ceremonies, processions, speech-making, and pyrotechnics, favored with delightful weather and the absence of any mishaps to mar the pleasure of the occasion. The bridge as it stands to-day, and so far as its capacity has been tested by the throngs that have moved over it, is a magnificent triumph of engineering skill, and a proud monument to John A. Roebling, its original designer. No detailed description, pictorial art or array of figures can convey anything more than an imperfect idea of the magnitude and massiveness of the towers and approaches, and the grace and symmetry of the unparalleled river span, or bridge proper. An intelligent inspection of the structure in all its visible parts will have the effect of modifying to some extent the prevailing impression that its cost has been excessive, and this impression will be further weakened by the well-considered statement of Hon. Abram S. Hewitt, in his address on the opening day, that the money the bridge has cost had been honestly expended, and that it was cheap at the price. The cable system for propelling passenger cars across the bridge will soon be put in operation, and then the practical working of the great link between the two cities will be complete.

AN ENTERPRISING NEWSPAPER MANAGER.

We have before us two somewhat remarkable letters in type-writing, signed by Edgar L. Wakeman, Northern Manager of the Louisville (Ky.) *Courier-Journal*, and addressed to two prominent business concerns in a neighboring city. These letters are doubtless a fair sample of many others issued from the same source. They contain bids for Exposition advertising, so frantic and ferocious, and couched in a style and diction so regardless of the established rules of syntax, as to indicate that the Northern Chicago manager is bent upon making hay while the sun shines. This is all well enough perhaps, when the financial exigencies of a great daily newspaper, with a "national reputation," "powerful influence" "occupying a high and exalted position," are of such a nature as require it. But the enterprising manager aforesaid, is not content with blowing his own trumpet, but travels out of his legitimate sphere by indulging in reckless and uncalled for assertions, of which the following is a sample:

"Nine-tenths of the railway officials of the country will not be at the Railway Exposition. * * * Whatever you may have already arranged for in railway publications, an entire page in all of them will not do for you what from 10 to 100 lines could with us—because railway periodicals are regarded a a permanent annoyance by railway officials, and never get nearer them than their clerks' waste-baskets."

It is more than probable that railway officials, as well as the manufacturers of machinery and dealers in railway supplies, are better able to form an intelligent estimate of the value of railway journals as advertising mediums than the local agent of a local political newspaper, who is engaged in the disinterested business of drumming up advertisements for a special issue, at "40 cents a line, with an unprecedented discount." The CAR-BUILDER does not deprecate flings of this sort on its own account, however insidious and underhanded they may be. Its every issue speaks for itself, and is an evidence of the estimation in which it is held by its patrons, and especially by railway men; and the same may be said of every other prosperous and well-conducted journal of its class. Our Kentucky "contemporary," if its towering greatness in the eyes of its ambitious northern manager does not make such a reference to it presumptous on our part, should confine itself to regulating the politics of the country, and chronicling the family feuds and tragedies which characterize the peculiar civilization of the State in which it is located. Railway class papers may be, as Mr. Wakefield says, a permanent annoyance to railway officials, but we venture to say that the transient annoyance of the parties to whom his begging letters are addressed, is far more aggravating, and were it to become "permanent," the size of ordinary office waste-baskets would have to be doubled in order to hold them.

THE CLEAR-STORY IN PASSENGER CARS.

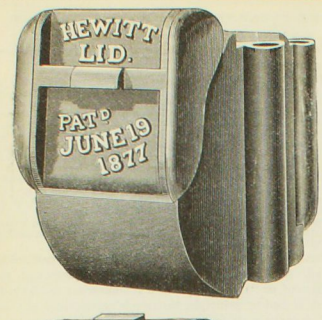
Mechanics questions the utility of this feature in passenger cars as follows:

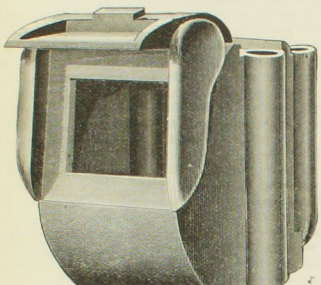
"In 1864 or 1865 the 'monitor,' or raised roof, was added to cars for the purpose of making more head room and better ventilation. It greatly increased the weight of the car, and at the same time weakened it. The objection to carrying it out the full width of the roof was that there was not sufficient head room under bridges, in tunnels, etc. On many roads this excuse has ceased to exist. The cars, with their hoods, ventilators, smoke-jacks, etc., have been widened at the top until they occupy fully as much space as though the raised roof should be carried out to the full width of the car. The advantage of such construction is obvious to any one. The strength of the car would be greatly increased, its ventilation and lighting improved, while in attractiveness of appearance it would be vastly ahead of the present style. While managers are seeking for novelties, it may be worth while for them to try building a car with a flat roof of the full height of the present raised deck."

That there is some force in these objections can not be denied. So far as mere construction is concerned, the raised-roof, or "clear-story" as it is somewhat ambitiously called, is bad in principle, because it necessitates the use of iron carlines shaped to conform to the four angles of the roof to give it stiffness and support, and as these carlines are covered over and hidden, the roof as a whole, and especially the raised portion, appears to be without requisite strength. Architecturally, the raised-roof has no warrant for its existence; but as an ornamental feature to diversify and render the overhead part of a car more stylish and pleasanter to look at, it serves its purpose very well. If there is any decided advantage derived from its use, it is in the matter of ventilation, by having side openings in the roof where they can be conveniently reached and regulated by any one standing in the aisle. These ventilator openings might be arranged, however, in a flat or arched roof built with rafters, but the great majority of travelers, after being so long accustomed to the raised-roof, would be likely to regard any other style as an unwelcome innovation, if not old-fashioned and commonplace.

The Railway Age of May 24 (the opening day of the Chicago Exposition) is luminous with pictorial illustrations of antique railway appliances. One of these represents a passenger car that ran on the Michigan Central Railroad about forty years ago. The engraving is a reproduction of one that was used on the tariff sheet of the road at the same time, and resembles in style the old calender cuts in the Farmers' Almanac. A half-dozen people, who look like "early settlers," are shown at the car windows, the coal-scuttle bonnets of the women reaching well up to the roof. A brakeman is on duty on the front and rear platforms, each wearing a swallow-tailed coat. As the timber used by the engraver was evidently fresh from the sawmill and a little sappy, it was impossible for the "pioneer" artist to bring out all the finer points of the car, such as couplings, springs, oil-boxes, ornamental lettering, and the like. From the appearance of the wheels, the vehicle is evidently moving at high speed, as it is impossible to make out, owing to the apparent rapidity of the revolutions, whether they are paper, cast iron, spoke or plate wheels. The ends of the axles are round and white, which is an indication that the journals are very hot, although there is no smoke or flame. If the brief period of forty years works such changes in car construction, where will the present "standards" of the master car-builders be forty years hence?

THE Kentucky Central road has just completed new shops at Covington, Ky., the dimensions of machine shop being 190x45 feet. Mr. A. H. Watts, the Master Mechanic, is very enterprising, and is putting in all improved tools and appliances. He is handicapped to some extent by the progress made in the work before he assumed his position. The pit-tracks run lengthwise, which necessitates pulling out the engines nearest the door to get out those forward of it. The width of the shop is just right for the modern style of short pit track across the length of the shop, each pit for a single engine. The company, with other new tools, bought a 100 horse-power stationary engine drive the shop with. This engine is of the plain slide-valve order. Mr. Watts takes no pleasure in showing it, as it is of antiquated design, is about twice too large and foretells a big hole in the coal pile. A 12×24 Buckeye or Porter-Allen automatic would have furnished steadier power with about one third the consumption of coal. He is also putting in a drop-table, a Niles driving-wheel lathe, a 1,100-lb. steam hammer and a great variety of other tools costing in all about $50,000. Two months ago the last of 6 new Baldwin 8-wheel engines, having 17×24-inch cylinders and 63-inch wheels, were received, also 6 new Baldwin Mogul freight engines, 18×24-inch cylinders, and 50-inch wheels. Four consolidation engines, 20×24-inch cylinders and 50-inch drivers, are expected soon from the Schenectady Locomotive Works, the driving-wheel base 15 feet 3 inches, weight on drivers 93,000 lbs., total wheel base 23 feet; total weight 106,000; capacity of tender 3,000 gallons; also from the Brooks Works 2 switching 6-wheel connected engines, 17×24 cylinders and 48-inch drivers, no truck, wheel base of engines 10 feet; of engine and tender, 33 feet; 2 inch 140 2-inch flues, 10 feet long; weight on each driver 10,666 lbs. A new combination directors, and pay car and four sleepers have just been completed, 4 coaches are being rebuilt, and 10 flat and box cars are turned out per month.





The Hewitt Box-Lid.

Although the merits of this box lid are widely known, the following testimonials are an evidence of its utility which can not but attract the attention of railway men. There is but one exception to the general approval, and that is in reference to its use on passenger cars. The objections in this case, however, can readily be overcome by careful fitting. Its adaptation to freight cars appears to be as complete as can be desired.

CHESAPEAKE & OHIO RAILWAY CO.,
Office of General Manager.
RICHMOND, Va., April 6, 1883.

R. M. Van Arsdale, Esq., Proprietor National Car-Builder, Morse Building, New York.

DEAR SIR: In reply to your favor of 3d, I can only say that the Hewitt Journal Box Lid, which is in use on this road, is giving entire satisfaction, and by reason of its simplicity and durability it is superior to any other box lid in use of which i have knowledge. I have yet to know of the first lid which has been broken by the ordinary handling, and we can always depend upon its being in place, regardless of the carelessness frequently practiced by employés who look after car journals. Yours very truly,

C. W. SMITH.

MICHIGAN CENTRAL RAILROAD CO.,
DETROIT, Mich., May 4, 1883.

R. M. Van Arsdale, Esq., Proprietor National Car-Builder, Morse Building, New York.

DEAR SIR: Absence from home has delayed reply to your favor of 26th, regarding the Hewitt Box Lid.

We have them in use on about 5,000 cars, and it has been adopted as a standard on all of this company's equipment.

It is economical in its first cost, and better than any other if properly made. Care should be taken in fitting them to box, and there should be m tal enough in the ears on oil box to prevent breaking; and if this is done the cost of maintenance of the Hewitt Lid is very slight.

Yours truly, ROBT. MILLER.

FLINT & PERE MARQUETTE RAILWAY,
Superintendent's Office.
EAST SAGINAW, Mich., April 28, 1883.

R. M. Van Arsdale, Proprietor National Car-Builder, Morse Building, New York.

DEAR SIR: Your favor of April 26 received, in which you say you desire to procure some information in regard to the practical working of the Hewitt Box Lid.

In answer will say: We have had the lid in use about 4 years on about 900 cars, and that our experience with it, to date, is entirely satisfactory. If the box is properly made according to instructions of the Hewitt Box Lid Co., I consider it far superior to any other lid that I have seen, as they are simple and their construction is such that they cannot get out of place, and always remain closed. I do not know that we have lost a lid off one of these cars, unless it is from an imperfect casting since we adopted them. We do not use them on our passenger equipment to any extent, as we had purchased the right to use the Fletcher lid and oil box, which works satisfactorily on passenger equipment. I do not know of any reason why the Hewitt Box Lid, if properly made, would not work as well on passenger equipment as on freight. Yours truly, SANFORD KEELER, Supt.

GULF, COLORADO & SANTA FE RAILWAY,
General Manager's Office.
GALVESTON, Tex., April 12, 1883.

R. M. Van Arsdale, Esq., Proprietor National Car-Builder, New York, N. Y.

DEAR SIR: On the receipt of your favor of the 3d inst. I requested from our Master Car-Builder an opinion on the subject.

His reply is, in substance, that the Hewitt Lid has given entire satisfaction on both freight and passenger cars, and that he cheerfully recommends it as the best lid in use. Very truly yours,

JOHN SEALY, General Manager.

NORTHERN PACIFIC RAILROAD CO.,
General Office 35 Wall St.,
NEW YORK, April 3, 1883.

R. M. Van Arsdale, Esq., Proprietor National Car-Builder, Morse Building, N. Y.

DEAR SIR: Replying to yours of this date to Vice-President Oakes, as to the Hewitt Journal Box Lid, would say we have referred your note to George W. Cushing, Esq., our Superintendent of Motive Power, at St. Paul, Minn., by whom all details of this nature are kept. We have only a general knowledge in our office here, which is not what you are after. You might write Mr. Cushing more at length if you think proper. Yours truly,

JAMES B. WILLIAMS, Asst. to President.

NORTHERN PACIFIC RAILROAD,
ST. PAUL, Minn., April 9, 1883.

R. M. Van Arsdale, Esq., Proprietor National Car Builder, N. Y. City.

DEAR SIR: Your letter of 3d inst., to Vice-President Oakes, relative to the practicable working of the Hewitt Box Lid, is referred to me.

I may say briefly, that the Hewitt Box Lid in use on the road covers all needed requirements to such extent as to justify its adoption on all our freight equipment. We now have it in use on about 3000 cars, and have specified it on those now building. In renewals also it is used exclusively. Respectfully yours,

G. W. CUSHING, Supt. M. P. M. & R. S.

RICHMOND & ALLEGHANY RAILROAD CO.,
Vice-President's Office,
RICHMOND, Va., April 21, 1883.

R. M. Van Arsdale, Esq., Prop. National Car-Builder, New York.

DEAR SIR: I send you herewith report of our Master Mechanic on the workings of the Hewitt Box Lid. I have given some attention to the matter, and fully indorse his opinion. The Hewitt Lid is in use on about 700 of our freight cars. This in reply to your letter of the 3d inst. Yours respectfully,

DECATUR AXTELL, Vice-Prest.

RICHMOND & ALLEGHANY RAILROAD CO.,
Master Mechanic's Office,
RICHMOND, Va., April 10, 1883.

D. Axtell, Esq., Vice-Prest.

DEAR SIR—We have been using the Hewitt Box Lid on our freight cars for the past two years. I do not think in that time we have lost a single lid. I believe it to be the best and most economical box lid in use at the present time. Yours truly,

GEO. D. HARRIS, M. M.

CHICAGO & ALTON RAILROAD CO.,
Office of the Superintendent of Machinery,
BLOOMINGTON, Ill., May 2d, 1883.

R. M. Van Arsdale, Esq., Proprietor National Car-Builder, New York.

DEAR SIR: In reply to yours of April 26th, addressed to J. C. McMullen, General Manager: We have used the Hewitt Journal Box Lid exclusively for the past five years on our freight equipment. It has our unqualified approval as being far superior to anything we have ever used. It recommends itself as of great economy to the company.

Respectfully, WM. WILSON, Supt. Mach'y.

CHICAGO, MILWAUKEE & ST. PAUL RAILWAY,
Office of Superintendent of Car Department,
MILWAUKEE, April 6, 1883.

R. M. Van Arsdale New, York City:

DEAR SIR: We have about 1,500 cars running with the Hewitt Oil Box and Cover; they are giving us the best of satisfaction

Yours truly, JNO. BAILIE, Supt.

KANSAS CITY, FORT SCOTT & GULF RAILROAD CO.,
General Manager's Office,
KANSAS CITY, April 7, 1883.

Mr. R. M. Van Arsdale, Proprietor National Car-Builder, Morse Building, New York:

DEAR SIR: We have the Hewitt Box Lid in use on a majority of our passenger and freight cars, and have used it for a number of years. It has given us better results than any lid previously used. When properly made and fitted, it keeps out dust, prevents waste of oil, and is not liable to be broken by ordinary use. Yours respectfully,

GEO. H. NETTLETON, General Manager.

THE MISSOURI PACIFIC RAILWAY CO.,
Office of General Transportation Manager,
ST. LOUIS, April 9, 1883.

Respectfully referred to John Hodge, Superintendent Car Department. Please give me your opinion of this matter.

A. A. TALMAGE, Gen. Trans. Manager.

THE MISSOURI PACIFIC RAILWAY CO.,
Car Department,
ST. LOUIS, April 11, 1883.

A. A. Talmage, Esq., Gen. Trans. Manager:

DEAR SIR: In reply to yours of 9th inst., asking my opinion of the Hewitt Journal Box Cover, would say that we have had them in use on line of our roads for the past three years; we have them on between 6,000 and 7,000 cars, and all are giving good satisfaction. It is, beyond a question, the best cover now in use. Yours respectfully,

JNO. HODGE, Supt. Car Dept.

BURLINGTON, CEDAR RAPIDS & NORTHERN RAILWAY CO.,
CEDAR RAPIDS, IOWA, April 10, 1883.

R. M. Van Arsdale, Esq., Morse Building, New York, N. Y.

DEAR SIR: In reply to yours of April 8, regarding the Hewitt Journal Box Lid, would say that we have had this lid in use something over a year, and in my opinion, when properly made and fitted, it is superior to any lid in use. Great care, however, must be taken in the castings, that the lid fits the box completely. Yours truly,

C. J. IVES, Gen. Supt.

THE NEW YORK, CHICAGO & ST. LOUIS RAILWAY CO.,
Office of Vice-President,
CLEVELAND, O., April 9, 1883.

Mr. R. M. Van Arsdale, Natl. Car-Builder, Morse Building, N. Y.

DEAR SIR: Replying to your recent letter, I know very little about the "practical working" of the Hewitt Journal Box Lid, as we have had it in use but a short time, but my impressions are in its favor.

Very truly yours, D. W. CALDWELL, Vice-President.

CENTRAL IOWA RAILWAY CO.
Office of Superintendent and Treasurer,
MARSHALLTOWN, IOWA, April 9 1883.

R. Van Arsdale Esq., National Car Builder, Morse Building, N. Y.

DEAR SIR: I have your favor of the 3d inst, in which you ask of information as to the practical working of the Hewitt Box Lid. I can say of it that it is the best device I know to overcome the wear on outer end of the axle, and is a fair protection in keeping out dirt, and it possesses the feature that it admits of oiling the boxes with little trouble. There may be a *better* invented, possibly, but there is now none known to me that is as *good*. This company has the right to use this Hewitt Box Lid, having thought it an object to purchase license. Yours Respt. D. N. PICKERING, Supt. and Treas.

THE INDIANA, BLOOMINGTON & WESTERN RAILWAY CO.,
OFFICE GENERAL MASTER MECHANIC,
Indianapolis, April 7, 1883.

R. M. Van Arsdale, Esq., New York:

DEAR SIR: Yours of the 3d inst. to Mr. C. E. Henderson, G. M., is before me, and in reply will say: We have in use on passenger and freight cars the Hewitt Journal Box Lid. It works loose on passenger cars in a short time, and often spoils the box, and at no time does it prevent the dust or water from getting into the box. I do not consider it as good a lid as we ought to have for boxes. Yours truly,

B. WARREN, General Master Mechanic.

The Late Howard Fry.

The attention of our readers is invited to the following circular, which we have no doubt will meet with a prompt and liberal response.

NEW YORK, May 23, 1883.

SIR: At a meeting of some of the friends of the late Howard Fry, which was held in New York, on May 17, for the purpose of expressing in some way their esteem for his character and the high regard with which they will always remember him, it was moved: "That the most fitting tribute to the memory of our deceased friend, and the one which would afford him the most gratification if he could know of what was done, would be the creation of a fund, by voluntary contribution, to be devoted to the education of his children." The motion to establish such a fund was unanimously adopted, and the following committee was appointed to receive subscriptions to it, the final dispositions of which is to be determined by a majority of the contributors who may attend a subsequent meeting to be called by the chairman of the committee. Subscriptions may be sent to any member of the committee. Checks should be made payable to the order of Charles Paine, treasurer of the fund. Respectfully,

M. N. Forney, Editor *Railroad Gazette*, 73 Broadway, New York;
Coleman Sellers, of Wm. Sellers & Co., Philadelphia;
Charles Paine, General Manager, New York, West Shore & Buffalo Railway, Mills Building, New York;
Theo. N. Ely, Supt. Motive Power & Machinery, Pennsylvania Railroad, Altoona, Pa.;
J. H. Belcher, Otis Iron & Steel Co., Room 24, Astor House, New York, Committee.

Bullion: This is a quarterly publication containing 140 wide and handsomely printed two-column pages, exclusive of maps and advertisements, the principal feature of which is a "Manual of American Railroads," containing brief digests of the financial condition of each company, official lists, etc., also a variety of matter pertaining to transportation interests, prices, financial and commercial exchanges, shipping, and special articles in reference to railroad progress throughout the world. The manual will be revised for each issue, and the issues will be made in January, April, July and November. R. C. Stone, editor and proprietor, 42 Broad street, New York.

Left By the Train.

We have been asked time and again how it is that so many people get left by the trains that go out of Austin. It is a very complicated matter, and we are not sure that we are equal to the task, but we will try. One reason is because they are not aboard the train. There are two public clocks in Austin, which are usually from 20 minutes to three-quarters of an hour ahead of each other. One of these clocks keeps railroad time, but nobody knows which one of the two clocks it is. The man who wants to leave Austin, say on the 11 o'clock train, must first find out which clock keeps railroad time. After he has satisfied himself on that point, he will have to go to the depot from 12 minutes to a half an hour before or after 11 o'clock, because the trains do not run on Austin railroad time, but according to St. Louis railroad time. If the would-be traveler understands algebra, he might cipher it out, or he can, if he sees proper, telegraph to St. Louis. That is one successful way to get left. Another and a better way, is for you, if you don't care to miss the train, to go to the railroad depot and ask what the schedule time is. As no train has ever yet arrived on schedule time, you will know for certain one time of day when the train will not arrive. Having gained that point, you must ask one of the employés how much behind time the train is, and if he says an hour, then you must come back in two hours, and you will hit it, provided the employé hasn't lied about it. Usually the blackboard at the railroad office tells you precisely how many hours the train is behind time, but as the figures are only changed once a week, they are not reliable, except by accident. However, the train always arrives when it gets here, and by going to the depot a day or so before you want to leave, and encamping there until the train does arrive, you will be all right, if you don't take the south-bound train instead of the north-bound train, or vice versa. As it is impossible to find out which is which, and as it is rather difficult for one man to travel on two trains going in different directions, the only really safe way not to miss the train is to walk. The man who has a walk-over can not be left.—*Texas Siftings.*

GENTLEMEN, I won't deceive you about that storm. I'll draw it very mild. There were things about it that you might not believe. Those details I will leave out. But you can get some idea of how it rained when I tell you that we put out a barrel without any heads into it, and it rained into the bunghole of that barrel faster than it could run out at both ends.

A YOUTH who was taking an airing in the country, tried to amuse himself by quizzing an old farmer about his bald head, but was extinguished by the old man, who solemnly remarked, "Young man, when my head gets as soft as yours I can raise hair to sell."

"WHAT time is it, my dear?" asked a wife of her husband, whom she suspected of being slightly "elevated," but who was doing his best to look sober. "Well, my darling, I can't tell, 'cause you see there are two hands on my watch, and each points to a different figure, and I don't know which to believe."

AN old lady in Pennsylvania refused the gift of a load of wood from a tree that had been struck by lightning, through fear that some of the "fluid" might remain in the wood and cause disaster to her kitchen stove.

Our Directory.

We note the following changes since our last issue:

Baltimore & Ohio.—N. E. Chapman has resigned the position of Master of Machinery, and Andrew J. Cromwell, Acting Master of Machinery, has been appointed as his successor.

Brunswick & Western.—H. S. Morse has been appointed General Manager, with office in Brunswick, Ga.

Cape Fear & Yadkin Valley.—James S. Morrison has been appointed Chief Engineer and Superintendent.

Chesapeake, Ohio & Southwestern.—Charles Daniels has been appointed Master Mechanic of the Memphis Division in place of H. A. Wentzel, resigned.

Chicago, St. Paul, Minneapolis & Omaha.—The St. Paul & Sioux City Divisions have been consolidated into one division. H. Spencer is Superintendent.

Chicago & Northwestern.—Wm. M. Fitch has been appointed Superintendent of Dakota Division in place of T. J. Nicholl, resigned.

Denver and Rio Grande.—R. B. Cable has been appointed General Superintendent of the Colorado and New Mexico Lines, with headquarters at Denver. Henry Wood remaining as General Superintendent of the Utah Lines, with headquarters at Salt Lake.

Detroit, Mackinac & Marquette.—The Purchasing Department, heretofore in charge of E. W. Allen, has been transferred to D. McCool, the General Superintendent.

The Florida Southern.—J. D. Hollister has been appointed Superintendent, with office at Palatka, Fla. He was recently Master Mechanic of the Savannah, Florida & Western Road.

New York, West Shore & Buffalo.—It is stated that R. H. Soule has been appointed Superintendent of Motive Power and Machinery, vice Howard Fry, deceased. Mr. Soule is now on the Pittsburg, Fort Wanye & Chicago.

Mobile & Ohio.—G. Jordan succeeds A. L. Rives as Vice-President and General Manager. Mr. Jordan has recently filled the same positions on the Houston & Texas Central.

Rumford Falls & Buckfield.—L. L. Lincoln has been appointed Superintendent in place of Otis Hayford, resigned.

Springfield, Effingham and South Eastern & Bloomfield.—These roads are now operated under the name of the Indiana & Illinois Southern Railroad.

Wisconsin Central.—E. K. Howes has been appointed Purchasing Agent, vice G. Campbell, resigned.

Employment.

Advertisements will be inserted under this heading for one dollar for each insertion.

WANTED.—A salesman on commission. A favorable arrangement may be made by a salesman having a good acquaintance among car-builders or purchasing agents of railroads. Address or call on firm of JOHN MATTHEWS, 333 East 26th street, New York.

CLARENCE BROOKS & CO.,

MANUFACTURERS OF FINE

RAILWAY AND COACH VARNISHES,

Cor. West and West 12th Streets, New York.

JOHN W. MASURY & SON,

MAKERS OF STRICTLY FIRST-CLASS

Railway Varnishes,

AND MANUFACTURERS OF

CAR BODY COLORS.

By permission, we refer to the following Companies, for whom we have made Special Colors:

PENNSYLVANIA RAILROAD CO., Enoch Lewis, Purchasing Agent, Philadelphia, Pa.
PENNSYLVANIA CO., Wm. Mullins, General Purchasing Agent, Pittsburg, Pa.
BALTIMORE & OHIO RAILROAD CO., N. S. Hill, Purchasing Agent, Baltimore Md.
CHICAGO & ALTON RAILROAD CO., A. Y. Hartwell, Purchasing Agent, Chicago, Ill.
CHICAGO & NORTHWESTERN RAILROAD CO., R. W. Hamer, Purchasing Agent, Chicago, Ill.
LEHIGH VALLEY RAILROAD CO., L. Chamberlin, Purchasing Agent, Philadelphia, Pa.
NORTHERN RAILROAD OF CANADA, F. W. Cumberland, Superintendent, Toronto, Ont.
NAUGATUCK RAILROAD CO., G. W. Beach, Superintendent, Waterbury, Conn.
PHILADELPHIA, WILMINGTON & BALTIMORE RAILROAD CO., S. A. Hodgman, Superintendent of Motive Power, Wilmington, Del.
NEW YORK, NEW HAVEN & HARTFORD RAILROAD CO., R. N. Dowd, Commissary, New Haven, Conn.
UNION PACIFIC RAILROAD CO., } A. D. Clark, Purchasing Agent, Omaha, Neb.
KANSAS " " " }
CHICAGO, BURLINGTON & QUINCY RAILROAD CO., Wm. Irving, Purchasing Agent Chicago, Ill.
LOUISVILLE, CINCINNATI & LEXINGTON RAILROAD CO., Wm. Mahl, Purchasing Agent, Louisville, Ky
GRAND TRUNK RAILWAY N. Wall, Port Huron, Mich.
LITTLE ROCK & FORT SMITH RAILROAD CO., T. Hartman, Purchasing Agent, Little Rock, Ark.
GILBERT & BUSH CO., Troy, N. Y. } Railroad Car Builders.
WASON MANUFACTURING CO., Brightwood, Mass. }
BILLMEYER & SMALL MANUFACTURING CO., York, Pa. }
JACKSON & SHARP CO., Wilmington, Del. }
BARNEY & SMITH MANUFACTURING CO., Dayton, O. }

The advantages derived from the use of such Special Colors are many, a few of which are found below:
ABSOLUTE UNIFORMITY OF SHADE. DURABILITY, as we use perfectly pure materials. **SAVING OF MONEY,** because of small quantity required. **SAVING OF TIME,** n be putting on of the same. **SAVING OF LABOR AND MATERIAL,** as no extra amount of Varnish will be required to hide a sanded surface. **LARGER DEGREE OF CERTAINTY** hat there will be an absence of cracked work, as our mixtures are all uniform, being done by weight only.
We make any desired shade, it only being necessary that purchasers furnish us with sample of color desired, stating the time they would like to have the paint dry in.
We shall be glad to furnish samples and give prices to any who may wish to avail themselves of the above advantages.
Very respectfully

JOHN W. MASURY & SON, New York and Chicago.

Established 1856.

Shipman & Bolen, Manufacturers of fine

Railway Varnishes,

No. 352 Mulberry St., Newark, New Jersey.

BILLINGS, TAYLOR & CO.,

(INCORPORATED.)

Color Makers,

AND MANUFACTURERS OF

COACH AND CAR COLORS AND FINE VARNISHES.

N. Y. Office, 105 John Street. CLEVELAND, OHIO.

JAMES T. PATTEN,

RAILWAY EQUIPMENT.

REPRESENTING THE

Wason Mfg. Co., of Springfield, Mass. RAILWAY CARS, ETC.
Portland Company, of Portland, Me. LOCOMOTIVES.

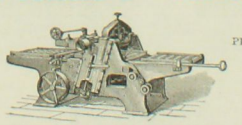
162 BROADWAY, - - - - NEW YORK.

J. A. FAY & CO.,

BUILDERS OF

WOOD WORKING MACHINERY,

FOR RAILROAD & CAR SHOPS, NAVY YARDS AND ARSENALS, BRIDGE SHOPS, ETC.



FOR CAR SILL DRESSING, PLANING AND MATCHING, CAR GAINING, CAR TENONING, MOLDING, SHAPING, MORTISING, BORING, ETC., ETC., ETC.

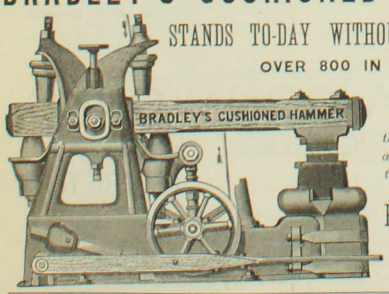
W. H. DOANE, Pres.
D. L. LYON, Sec'y.

CINCINNATI, OHIO, U. S. A.

BRADLEY'S CUSHIONED HAMMER

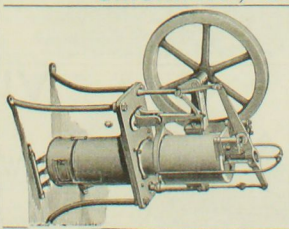
STANDS TO-DAY WITHOUT AN EQUAL.

OVER 800 IN USE.



It approaches nearer the action of the Smith's arm than any hammer in the world.

BRADLEY & CO.,
Syracuse, N. Y.
[Established 1832.



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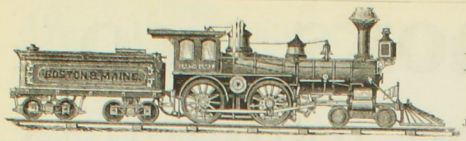

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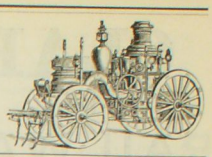

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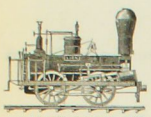

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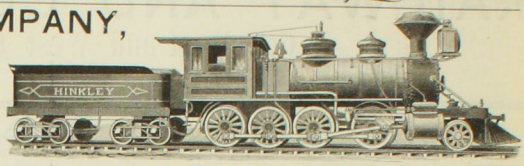

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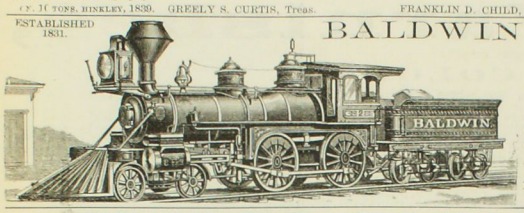

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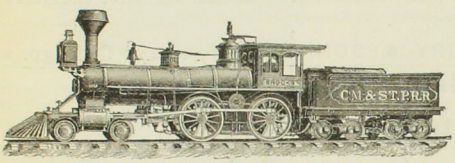

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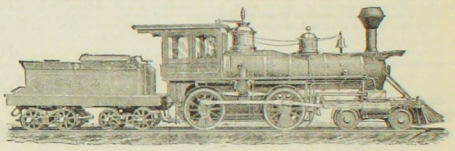

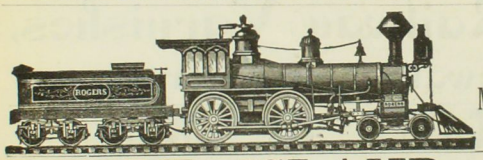

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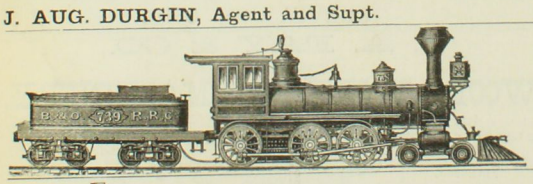

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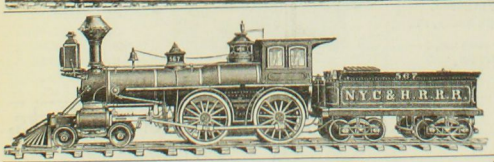

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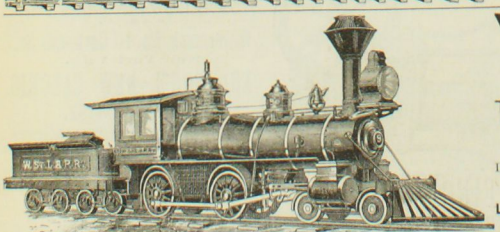

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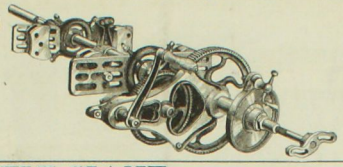

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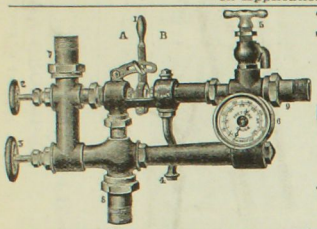

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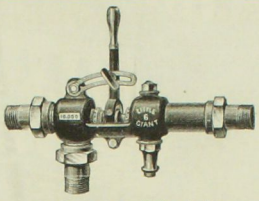

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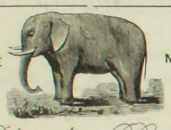
TRADE  MARKS:

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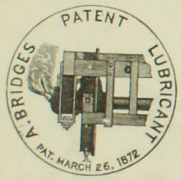

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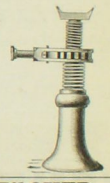

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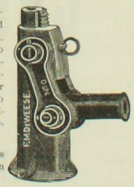

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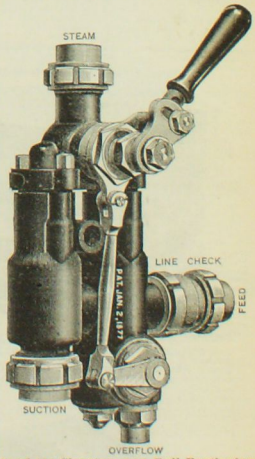

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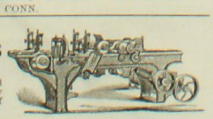

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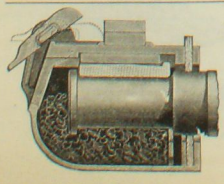

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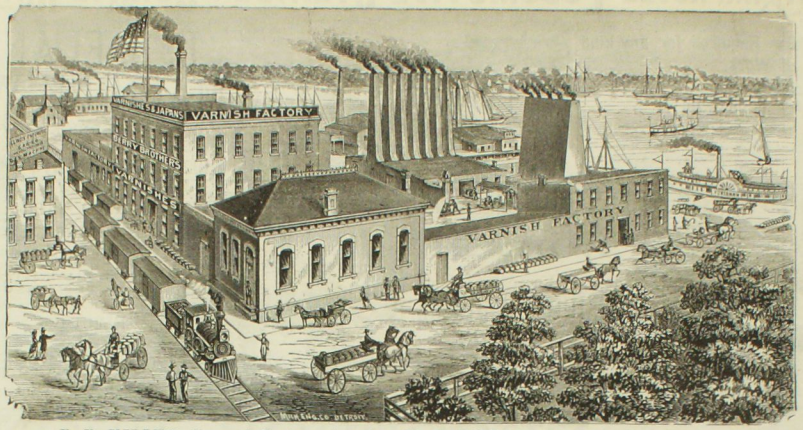

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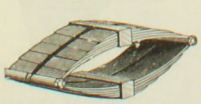

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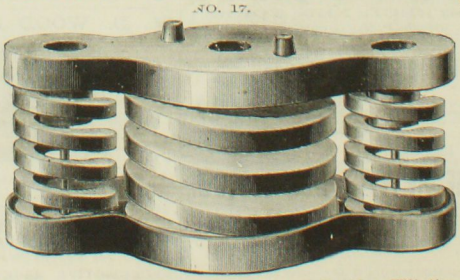

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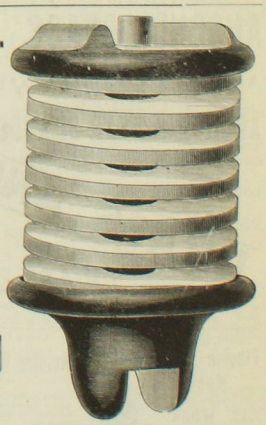
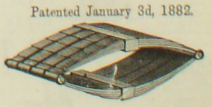


Patented January 3d, 1882.



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4-8½ g. 1,900 m. 347 lo. 0,907 cars.
C. C. Wheeler, *Gen. Supt* ..... Topeka, Kan.
D. J. Chase, *Gen. Supt* ..... Topeka, Kan.
W. W. Allen, *Asst. Supt* ..... Topeka, Kan.
F. M. Smith, *Pur. Agt* ..... Topeka, Kan.
Geo. Hackney, *Supt. Lo. & Car. Dept* do.
Clem. Hackney, *Asst. Sup. L. & C. Dept* do.
Eastern Div.: C. M. Rabbun, *Supt.* ..... Topeka, Kan
Henry Hull, *G. F. Car Dept.* ..... Topeka, Kan.
John Fagan, *M. M* ..... Atchison, Kan.
J. M. Smith, *M. M* ..... Kansas City, Mo.
Alfred Taylor, *M. M* ..... Emporia, Kan.
Mid. Div.: H. R. Nickerson, *Supt* Nickerson, Kan.
W. Y. Johnson, *M. M* ..... Nickerson, Kan.
J. Q. Adams, *M* ..... Dodge, Kan.
Col. Div.: W. W. Borst, *Supt* ..... La Junta, Col.
A. U. Stiles, *M. M* ..... La Junta, Col.
D. H. Dotterer, *M. M* ..... Raton, N. M.
Las Vegas D.: Geo. L. Sands, *Supt* Las Vegas, N. M.
L. B. Waugh, *M. M* ..... Las Vegas, N. M.
Rio G. Div.: Geo. L. Sands, *Supt.* Las Vegas, N. M.
J. H. Holman, *M. M* ..... Wallace, N. M.
J. W. Sager, *M. M* ..... San Marcial, N. M.
H. P. Olcott, *M. M* ..... Deming, N. M.
Atlanta & West Point R. R. *(See Western of Ala.)*
Atlantic & Pacific R. R. 4-8½ g. 280 m.
F. W. Smith *Gen. Supt* ..... Albuquerque, N. M.
Geo. Chalender, *Div. Supt* ..... Albuquerque, N. M.
H. Hardy, *Div. Supt* ..... Williams, Ar.
Chalender, *Supt., M. P. & M.* ..... do.
D. B. Sibley, *Pur. Agt* ..... Chicago, Ill.
Augusta & Knoxville R. R. ..... 30 miles.
Gen. Supt & M. M. Augusta Ja.

B

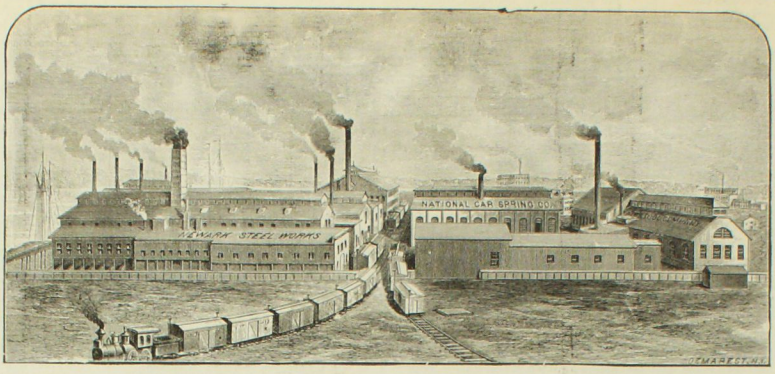
Baltimore & Ohio R. R.
4-8½ g. 1,539 m. 546 lo. 14,932 cars.
N. S. Hill, *Pur. Agt* ..... Baltimore, Md.
E. Ohio Riv. Div. ..... 4-8½ g. 972 m.
W. M. Clements, *M. st. Trans* ..... Baltimore, Md.
A. J. Cromwell, *Act. M. of M* ..... Baltimore, Md.
L. Packard, *M. C. B* ..... Baltimore, Md.
I. N. Kalbaugh, *M. M* ..... Baltimore, Md.
Wm. Edwards, *M. M* ..... Martinsburgh, W. Va.
Sam. Houston, *M. M* ..... Piedmont, W. Va.
Robert Maxwell, *M. M* ..... Cumberland, Md.
S. B. Crawford, *M. M* ..... Grafton, W. Va.
Alex. Laird, *M. M* ..... Parkersburg, W. Va.
Chas. Hirsch, *M. M* ..... Wheeling, W. Va.
Pitts. Div.: T. M. King, *Gen. Supt* ..... Pittsburg, Pa.
J. E. Sampsell, *Asst. M. of M* Connelsville, Pa.
Trans. Ohio Divs.: B. Dunham, *G. Man* ..... Newark, O.
W. H. Harrison, *Asst. M. of Mach* ..... Newark, O.
E. L. Welsgerber, *M. M* ..... Newark, O.
H. M. Ingler, *M. M* ..... Bellaire, O.
O. B. Perkins, *M. M* ..... Zanesville, O.
Andrew Beckert, *M. M* ..... Sandusky, O.
F. J. Gunther, *M. M* ..... Chicago Junction, O.
Chi. Div.: *Gen. Supt* ..... Chicago, Ill.
Benj. Lowther, *M. M* ..... Garrett, Ind.
H. W. Wilkinson, *M. M* ..... Kingston, Ill.
Baltimore & Philadelphia. 4-8½ g. 20 m. 4 lo. 35 c.
D. Connell, *Supt* ..... Wilmington, Del.
Baltimore & Potomac R. R. *(See Penna. R. R.)*
Bangor & Piscataquis R. R. 4-8½ g. 63 m. 4 lo. 87 cars.
Arthur Brown, *Supt* ..... Bangor, Me.
E. S. Nason, *M* ..... Bangor, Me.
J. W. Comins, *M. C. B* ..... Oldtown, Me.
Barclay R. R. 4-8½ g. 16 miles.
F. F. Lyon, *Supt* ..... Barclay, Pa.
J. A. Hardenburg, *Pur. Agt* ..21 Cort. st', N. Y.
Wm. Johnson, *M. M* ..... Towanda, Pa.
Bedford, Springville, Juwenaurg & Bloomfield Ry.
3 g. 41 m. 5 lo. 65 cars.
Jas. W. Kennedy, *Gen. Supt. & Pur. Agt.*; and
Capt. Geo. Elliott, *M. M* ..... Bedford, Ind.
Richard G. Elliott, *M. C. B* ..... Bedford, Ind.
Bellaire, Zanesville & Cin. Ry. Co. 3 g. 42 m. 3 lo. 59 c.
Jos. Cochran, *Mast. Trans* ..... Bellaire, O.
Bell's Gap R. R. 3 g. 23 m. 4 lo. 139 cars.
R. G. Ford, *Supt* ..... Bellwood (P. O.) Pa.
W. Scrannerman, *M. C. B* ..... Bellwood Pa.
Bennington & Rutland Ry. 4-8½ g. 9 m. 10 lo. 214 c.
F. C. White, *Supt. & Pur. Agt.* Bennington, Vt.
W. W. Blanchard, *M. M* ..... Rutland, Vt.
Bingham, Canyon & Camp Floyd, and
Wasatch & Jordan Valley R. R's.
3 g. 44 m. 7 lo. 350 cars.
J. G. Kennedy, *Gen. Man* .Salt Lake City, Utah
Geo. M. Young, *Supt* ..... do.
Bodie Lumber Co. 3 g. 8 miles.
Thomas Holt, *Supt. & Pur. Agt* ..... Bodie, Cal
Jas. Puckett, *M. M & C. B* ..... Bodie, Cal.
Boston, Barre & Gardner. 4-8½ g. 36 m. 7 lo. 107 c.
H. M. Witter, *Supt. & Pur. Agt* Worcester, Mass.
Chas. F. Brigham, *M. M* ..... Worcester, Mass.
Boston Concord, Montreal & White Mts. R. R.
4-8½ g. 107 m. 34 lo. 677 cars.
W. A. Worrell, *Supt* ..... Lake Village, N. H.
Geo. W. Storer, *Pur. Agt* ..... Boston, Mass.
R. Adams, *M. M* ..... Lake Village, N. H.
G. A. Fergrison, *Asst. M. M* ..... Lake Village, N. H.
L. D. Pickering, *M. C. B* ..... Lake Village, N. H.
Boston, Hoosac Tunnel & W'n Ry.
4-8½ g. 65 m. 18 lo. 1,038 cars.
H. L. Morrill, *Gen. Man* ..... Saratoga, N. Y.
C. H. Cory, *Supt* ..... Mechanicville, N. Y.
J. H Wilder, *Pur. Agt* ..... Mechanicville, N. Y.
C. H. Corey, *M. M* ..... Mechanicville, N. Y.
John S. Ellis, *M. C. B* ..... Mechanicville, N. Y.
Boston, Revere Beach & Lynn R. R. 3 g. 9 m. 5 lo. 40 c.
L. C. Legro, *M. of Trans* ..... Boston, Mass.
C. A. Hammond, *Supt. & P. Agt* Boston, Mass.
L. J. Edson, *M. M* ..... Boston, Mass.
John Coghlan, *M. C. B* ..... Boston, Mass.
Boston & Albany R. R. 4-8½ g. 372 m. 245 lo. 6,111 c.
W. H. Barnes, *Gen. Supt* ..... Boston, Mass.
E. Gallup, *Asst. Supt* ..... Springfield, Mass.
A. B. Underhill, *Supt. M. P* ..Shirleyfield, Mass.
F. D. Adams, *Gen. M. C. B* ..... Allston, Mass.
H. B. Chesley, *Div. Supt* ..... Boston, Mass.
G. H. Colby, *Div. M. M* ..... Boston, Mass.
C. E. Grover, *Div. Supt* ..... Springfield, Mass.
H. W. Eddy, *Div. M. M* ..... Springfield, Mass.
J. B. Weston, *Div. Car Sh* .Springfield, Mass.
W. H. Russell, Jr., *Div. Supt* E. Albany, N. Y.
T. B. Purvis, *Div. M. M* ..... East Albany, N. Y.
J. E. Doran, *Div. Car Sh* ..... East 'n bany, N. Y.
Boston & Lowell R. R.
4-8½ g. 140 m. 73 lo. 1,231 cars.
C. H. Mellen, *Supt* ..... Boston, Mass.
F. H. Nourse, *Pur. Agt* ..... Boston, Mass.
J. F. Crockett, *Supt. T. & Mach* ..Boston, Mass.
Boston & Maine R. R. 4-8½ g. 396 m. 89 lo. 3,100 c.
J. T. Furber, *Gen. Supt. & P. A* ..Boston, Mass.
Geo. J. Fisher, *Pur. Agt* ..... Boston, Mass.
Wm. Smith, *M. M* ..... Boston, Mass.
D. C. Richardson, *M. C. B* ..... Lawrence, Mass.
Boston & Providence R.R. 4-8½ g. 67 m. 32 lo. 1,066 c.
A. A. Folsom, *Gen. Supt* ..... Boston, Mass.
Geo. Richards, *M. M* ..... Roxbury, Mass.
Jno. Lightner, *M. C. B* ..... Roxbury, Mass.
Bradford, Bordell & Kinzua R. R. 3 g. 30 m. 5 lo. 80 c.
R. G. Taylor, *Gen. Man* ..... Bradford, Pa.
John Delaney, *M. M. & C. B* ..... Bradford, Pa.
Bradford, Eldred & Cuba R.R. *(See Tonawanda, etc.)*
Breakwater & Frankford R. R. *(See Junc. & Break.)*
Brighthope & Sc. W'n ..... 3 g. 37 m. 3 lo. 150 cars.
Jas. R. Worth, *Supt* ..... Richmond, Va.
A. Gary, *Supt. Way & Works* Winterpock, Va.
Alex. Archer, *M. M* ..... Chester, Va.
Brunswick & Western R. R. 5 g. 172 m. 13 lo. 170 c.
H. S. Morse, *Gen. Man* ..... Brunswick, Ga.
R. D. Hiller, *Supt* ..... Brunswick, Ga.
Buff., N. Y. & Phila. Ry. 3 & 4-8½ g. 242 m. 48 lo. 3,500 c.
Geo. S. Gatchell, *Gen. Supt* ..... Buffalo, N. Y.
W. W. Bibley, *Asst. Gen. Supt* ..... Buffalo, N. Y.
J. H. Poole, *Pur. Agt* ..... Buffalo, N. Y.
Allen Vail, *Supt. M. P. & M* ..... Buffalo, N. Y.
Buff. & Erie R. R. T. Hardinge, *Supt* ..... Chester, Va.
Roch. Div.: R. M. Patterson, *Supt.* Rochester, N. Y.
N. G. Div.: J. W. Watson, *Supt* ..... Olean, N. Y.
Riv. Div.: J. Gifford, *Supt* ..... Buffalo, N. Y.
Pitts. Div.: E. H. Witter, *Supt* ..... Pittsburg, Pa.
Buff., Pittsburg & W'n R. R. 4-8½ g. 156 m. 331 lo. 975 c.
O. Watson, *Asst. Supt. Pur. Agt.* Buffalo, N. Y.
E. H. Witter, *Asst. Supt* ..... Oil City, Pa.
H. J. Bookhammer, *M. M* ..... Oil City, Pa.
John Gerry, *M. C. B* ..... Oil City, Pa.
Burlington, Cedar Rapids & Northern Ry
4-8½ g. 713 m. 73 lo. 2,738 cars.
C. J. Ives, *Gen. Supt* ..... Cedar Rapids, Ia.
Robt. Williams, *Supt* ..... Cedar Rapids, Ia.
T. Stickney, *Pur. Agt* ..... Cedar Rapids, Ia.
R. R. Woodworth, *M. M. & C. B* Cedar Rapids, Ia.
Burlington & Lamoille R. R. 4-8½ g. 35 m. 4 lo. 64 c.
G. L. Linsley, *Gen. Man. & Supt.* Burlington, Vt.
F. G. Brownell, *M. M., M. C. B. & P. A* ..... do.
Burlington & Mo. Riv. R. R. (in Neb.) *(See C., B. & Q.)*
Burlington & North-West'n Ry. 3 g. 38 m. 3 lo. 8 c.
John Gerry, *Supt* ..... Burlington, Ia.
Burlington & Ohio River R. R.
Gen. Man. & Pur. Agt. Chicago, Ill.
J. K. Lape, *Supt. of Equip* ..... Chicago, Ill.

C

California Southern R. R. 4-8½ g. 127 m. 13 lo. 301 c.
J. S. Victor, *Supt* ..... National City, Cal.
Berkley Perry, *Mech. Supt.* National City, Cal.
Camden & Atlantic R. R. 4-8½ g. 79 m. 16 lo. 294 c.
J. T. Dilks, *Supt & Pur. Agt* Camden, N. J.
Rufus Hill, *M. M* ..... Camden, N. J.
Samuel Wills, *M. C. B* ..... Camden, N. J.
Canada Southern Ry. 4-8½ g. 403 m. 80 lo. 3,367 c.
W. P. Taylor, *Gen. Man* ..... Buffalo, N. Y.
A. F. Howland, *Pur. Agt* ..... St Thomas, Ont.
Roh. Pierce, *Gen. M. C. B* ..... St Thomas, Ont.
Can. Div.: E. P. Murray, *Supt.* St. Thomas, Ont.
Robert Potts, *M. C. B* ..... St. Thomas, Ont.
U. S. Div.: E. P. Murray, *Supt* ..... Detroit, Mich.
O. P. Dunbar, *M. M* ..... Grosse Isle, Mich.
Canadian Pacific R. R. 4-8½ g. 551 m. 26 lo. 473 c.
W. Cho. Horne, *Gen. Man* ..... Winnipeg, Man.
Eastern Div ..... 240 m. 16 lo. 276 cars.
Archer Baker, *Gen. Supt* ..... Montreal, Can.
Thos. Irwin, *Mech. Supt* ..... Brockville, Ont.
Western Div. ..... 311 m. 10 lo. 207 cars.
J. M. Egan, *Gen. Supt* ..... Winnipeg, Man.
T. W. Stanton, *Gen. Pur. Agt* Winnipeg, Man.
F. C. Butterfield *M. M. & M. C. B.* Winnipeg, Man.
Cape F'r & Yadkin Val. R. R. 4-8½ g. 47 m. 3 lo. 31 c.
J. S. Armstrong, *Gen. Supt* ..... Fayetteville, N. C.
Isaac W. Clark, *M. M. & C. B.* Fayetteville, N. C.
Carolina Central R. R. *(See Ral. & Aug.)*
Carson & Colorado R. R. *(See Va. & Truckee.)*
Catasauqua & Fogelsville. 4-8½ g. 25 m. 6 lo. 577 c.
C. W. Chapman, *Supt. & P. A* Catasauqua, Pa.
J. Thompson, *M. M* ..... Hokendauqua, Pa.
Chas. J. Holbach, *M. C. B* ..... Catasauqua, Pa.
Central and South-Western Railroads (Ga.).
3 g. 975 m. 377 lo. 1,858 cars.
W. G. Raoul, *Pres* ..... Savannah, Ga.
Wm. Rogers, *Gen. Supt* ..... Savannah, Ga.
C. H. Carson, *Pur. Agt* ..... Savannah, Ga.
Cen. Div.: D. D. Arden, *M. M* ..... Savannah, Ga.
John McCann, *M. M* ..... Augusta, Ga.
F. Devine, *Fore. C. Sh* ..... Savannah, Ga.
So.-West'n Div.: W. F. Shellman, *Supt.* Macon, Ga.
D. M. Gugel, *M. M* ..... Macon, Ga.
James A. Knight, *M. C. B* ..... Macon, Ga.
Central R. R. of N. J. 4-8½ g. 544 m. 294 lo. 27,198 c.
W. W. Stearns, *Gen. Supt* ..... Elizabeth, N. J.
R. W. Burnett, *Pur. Agt* ..... New York, N. Y.
Cen Div.: W. Woodcock, *M. M* Elizabethport, N. J.
Geo. Hackett, *M. C. B* ..... Elizabethport, N. J.
C. G. Williams, *M. M* ..... Jersey City, N. J.
John Alpaugh, *M. M* ..... Phillipsburg, N. J.
Longb'r. Div.: J. F. Randolph, *Supt* Long Branch, N. J.
N. J. So. Div.: J. Blodgett, *Supt* ..... Manchester, N. J.
Wm. Montgomery, *M. M* ..... Manchester, N. J.
Chas. N. Sawyer, *M. C. B* ..... Manchester, N. J.
Lehigh & Susquehanna Div.:
W. S. Polhemus, *Supt* ..... Mauch Chunk, Pa.
L. C. Brastow, *Supt. Mach* ..... Ashley, Pa.
Central R. R. of S. C. *(See Wil. & Wel.)*
Central Iowa Ry. 4-8½ g. 354 m. 49 lo. 1,950 cars.
D. N. Pickering, *Gen. Supt* ..... Marshalltown, Ia.
John Player, *M. M* ..... Marshalltown, Ia.
T. L. Seevers, *M. C. B* ..... Marshalltown, Ia.
Central Pac. R. R. 4-8½ g. 3,780 m. 390 lo. 7,277 c.
A. N. Towne, *Gen. Man.* ..... San Francisco, Cal.
J. A. Fillmore, *Gen. Supt* ..San Francisco, Cal.
R. H. Pratt, *A. Supt* ..... San Francisco, Cal.
J. R. Watson, *Gen. Pur. Agt* ..Sacramento, Cal.
A. J. Stevens, *Gen. M. M* ..... Sacramento, Cal.
W. H. Kenzie, *Asst. G. M. M* ..Sacramento, Cal.
Benj. Welch, *Gen. M. C. B* ..... Sacramento, Cal.
G. J. Turner, *Asst. G. M. C. B* Sacramento, Cal.
Western: Thos. Hall & Tulare Divs. and Southern Pty
A. D. Wilder, *Supt* ..... W. Oakland, Cal.
G. D. Welch, *M. M* (W. Div.) W. Oakland, Cal.
W. B. Hollow, *M. C. B* (W. Div.) do.
S. Johnson, *M. M* (T. Div.) ..... Tulare, Cal.
D. Rutherford, *M. M.* (N. Rd.) 8. Vallejo, Cal.
Sacramento Div.: Oregon Divs.: and R. R. Ist.
J. B. Wright, *Supt* ..... Sacramento, Cal.
M. W. Cooley, *M. M. (S. Div)* Sacramento, Cal.
Truckee Div.: Truckee Divs. *Supt.* Verdi, Nev.
Geo. Gregg, *M. M* ..... Wadsworth, Nev.
Wm. McPherson, *F. Car Sh.* Wadsworth, Nev.
Humb'dt Div.: Humb'dt, Coldington, Suppl. Humb'dt, Nev.
W. F. Smith, *M. M* ..... Carlin, Nev.
J. C. Doughty, *For. Car Sh* ..... Carlin, Nev.
Salt Lake Div.: G. Gelwicks, *Supt* ..... Ogden, Ut.
James Lamb, *M. M* ..... Terrace, Utah.
A. Sherburne, *For. Car Sh* ..... Ogden, Utah.
Los Angeles and Visual Divs. (So. Pac.):
E. E. Hewitt, *Asst. Supt* ..... Los Angeles, Cal.
James Velsir, *M. M* ..... Los Angeles, Cal.
T. T. Cleland, *For. Car Sh.* Los Angeles, Cal.
Arizona Divs (So. Pac.):
A. A. Bean, *Asst. Supt* ..... Tucson, Ariz.
W. F. Smith, *M. M* ..... Tucson, Ariz.
Rio Grande and El Paso Divs. (So. Pac.):
J. Campbell, *Asst Supt.* ..... El Paso, Texas.
H. U. Standish, *For. Sh.* ..... El Paso, Texas.
Central Vermont R. R. 4-8½ g. 548 m. 132 lo. 2,522 c.
J. W. Hobart, *Gen. Supt* ..... St. Albans, Vt.
J. M. Foss, *Asst. Gen. Supt & M. M.* St. Albans, Vt.
No. Div.: I. B. Futvoye, *Supt.* ..... St. Johns, P. Q.
Hud. Riv.: J. Burdett, *Supt* ..... Rutland, Vt.
N. L. Davis, *M. M. & C. B* ..... Rutland, Vt.
Brat. Div.: E. F. Brooks, *Supt* ..... Brattleboro, Vt.
New London & No'n R. R. 143 m. 22 lo. 303 c.
G. W. Bentley, *G. Supt. & P. A* ..New London, Ct.
I. W. Dow, *M. M* ..... New London, Ct.
S. O. Banks, *M. C. B* ..... New London, Ct.
Charleston & Savannah Ry. 5 g. 115 m. 17 lo. 98 c.
H. S. Haines, *Gen. Man* ..... Savannah, Ga.
C. S. Gadsden, *Gen. Supt* ..... Charleston, S. C.
H. A. Ulmo, *M. M* ..... Savannah, Ga.
Charlotte, Columbia & Augusta R. R. *(See Rich. & D.)*
Chateaugay R. R. 3 g. 34 m. 0 lo. 125 cars.
A. L. Inman, *Gen. Man* ..... Plattsburg, N. Y.
J. M. Davis, *Supt. & M. M* ..... Plattsburg, N. Y.
Chattarol Ry. 4-8½ g. 43 miles 11 loco. 483 cars.
C. H. Rockwell, *Gen. Man. & P. A* Ashland, Ky.
J. R. Martin, *M. M* ..... Ashland, Ky.
Joseph P. Burleigh, *M. C. B* ..... Ashland, Ky.
Cheraw & Chester R. R. 3 g. 30 m. 3 lo. 38 cars.
W. H. Harding, *Pres. & Supt* ..... Chester, S. C.
A. M. Manning, *M. M* ..... Chester, S. C.
Cheraw & Darlington R. R. *(See Wil. & Wel.)*
Cheraw & Salisbury R. R. *(See Wil. & Wel.)*
John Postel, *Manager* ..... Cedartown, Ga.
C. E. Scruton, *M. M. & C. B* ....Cedartown Ga.
Chesapeake, Lake Erie & W'n ..... 4-8½ g. 398 m. 47 lo. 1,339 c.
D. W. C. Brown, *G. S. & Pur. Agt.* Louisville, Ky.
H. E. Huntington, *Pres. Agt* ..... Louisville, Ky.
F. H. Britton, *Mast. Trans* ..... Paducah, Ky.
W. D. Robb, *S. M. P. & M* ..Elizabethtown, Ky.
Geo. Bickel, *M. M* ..... Elizabethtown, Ky.
Chas. Daniels, *M. M* ..... Paducah, Ky.
Chesapeake & Ohio Ry. 4-8½ g. 642 m. 133 l. 3,543 c.
C. W. Smith, *Gen. Man.* ..... Richmond, Va.
D. A. Sweet, *Asst. to Gen. Man.* Richmond, Va.
A. H. Wood, *Asst. Gen. Supt.*, Huntington, W. Va.
A. S. Digges, *Pur. Agt* ..... Richmond, Va.
John McFarland, *Supt. M. P* ..... Richmond, Va.
Eastern Div.: E. T. Smith, *Supt.* ..Richmond, Va.
J. N. King, *M. C. B* ..... Richmond, Va.
Hunt. Div.: W. P. Harris, *Supt* ..... Hinton, W. Va.
T. L. Chapman, *Asst. Supt. M. P.*, and
H. C. Bushger, *M. C. B* Huntington, W. Va.
Lex. Div.: J. D. Yarrington, *Supt.* Lexington, Ky.
Chesnire R. R. 4-8½ g. 80 m. 30 lo. 466 cars.
R. Stewart, *Gen. Man* ..... Keene, N. H.
H. H. Stone, *Pur. Agt* ..... Keene, N. H.
F. A. Perry, *M. M* ..... Keene, N. H.
A. E. Bishop, *M. C. B. For. Car Sh* ..Keene, N. H.
Chester & Lenoir Ry. 3 g. 50 m. 3 lo. 23 cars.
James Mason, *Supt* ..... Yorkville, S. C.
T. P. Beard, *M. M* ..... Yorkville, S. C.
Chicago, B. & Kan. City Ry. 4-8½ g. 181 m. 9 lo. 130 c.
Robt. Law, *Gen. Supt.* ..... Keokuk, Ia.
W. H. Bartlett, *Asst. M. M* ..... Burlington, Ia.
Chicago, Burlington & Quincy R. R.
4-8½ g. 2,924 m. 921 lo. 18,955 cars.
T. J. Potter, *Gen. Man* ..... Chicago, Ill.
(1) C., B. & Q., East of Mo. Riv. 1,938 miles.
H. B. Stone, *Gen. Supt* ..... Chicago, Ill.
Geo. C. Smith, *Pur. Agt* ..... Chicago, Ill.
G. W. Rhodes, *Supt. M. P* ..... Aurora, Ill.
Wm. Forsyth, *M. of Trans. Eng* Aurora, Ill.
Ill. Divs.: J. D. Besler, *Supt* ..... Galesburg, Ill.
Chi. Div.: Geo. Alexander, *Supt* ..... Aurora, Ill.
I. E. Johnson, *M. M* ..... Aurora, Ill.
Galesburg Div.: F. C. Rice, *Supt* Galesburg, Ill.
Robert Colville *M. M* ..... Galesburg, Ill.
St. Louis Div.: E. Crance, *Supt* ..... Beardstown, Ill.
A. Forsyth, *M. M* ..... Beardstown, Ill.
Ia. & Mo. Divs.: *Supt* ..... Burlington, Ia.
East. Div.: O. E. Stewart, *Supt.* Burlington, Ia.
Joel West, *M. M* ..... Burlington, Ia.
Mid. Div.: J. B. Maxon, *Supt* ..... Ottumwa, Ia.
West'n Div.: W. H. Ryder, *Supt* ..... Creston, Ia.
C. W. Eckerson, *M. M* ..... Creston, Ia.
(2) C., B. & Q., West of Mo. Riv. 935 miles.
G. W. Holdrege, *Gen. Supt* ..... Omaha, Neb.
Jas. M. Barr. *Pur. Agt* ..... Omaha, Neb.
D. Hawksworth, *Gen. M. M* Plattsmouth, Neb.
R. V. Dix, *Div. Supt* ..... Lincoln, Neb.
A. & N. Div.: J. McConniff, *Supt* ..Lincoln, Neb.
Chicago, Milwaukee & St. Paul R. R.
4-8½ g. 1,885 m. 820 lo. 13,650 cars.
S. S. Merrill, *Gen. Man* ..... Milwaukee, Wis.
J. T. Clark, *Gen. Supt* ..... Milwaukee, Wis.
J. T. Gates, *Pur. Agt* ..... Milwaukee, Wis.
J. M. Lowry, *Gen. M. M* ..... Milwaukee, Wis.
E. Fairbairn *M. M* ..... Milwaukee, Wis.
John Hallo, *Supt. Car Dept* ..Milwaukee, Wis.
(1) H. C. Atkins, *Asst. Gen. Supt* ..Milwaukee, Wis.
Chi. Div.: S. J. Collins, *Supt* ..... Chicago, Ill.
La Crosse Div.: W. G. Collins, *Supt.* Milwaukee, Wis.
C. Bluffs Div.: A. J. Earling, *Supt.* ..... Marion, Ia.
P. du C. & M. Pt. Divs.:
B. Campbell, *Supt* ..... Milwaukee, Wis.
(2) C. H. Prior, *Asst. Gen. Supt.* ..Minneapolis, Minn.
H. & D. Div.: M. W. Kellie, *Supt* ..... do.
J. O. Pattie, *M. M* ..... Minneapolis, Minn.
Ia. & Minn. Div.: H. R. Williams, *Supt.* ..... do.
So. Minn. & River Divs.:
C. W. Case, *Supt* ..... Dubuque, Ia.
Ia. & Da. Div.: G. W. Sanborn, *Supt.* Mason City, Ia.
S. Cy. & Da. Div.: J. Jackson, *Supt* Sioux City, Ia.
F. H. Monilton, *M. M* ..... Yankton, Dak.
Dubuque Div.: C. W. Case, *Supt* ..... Dubuque, Ia.
S. Charnley, *M. M* ..... Dubuque, Ia.
(3) D. A. Olin, *Asst. Gen. Supt* ..... Racine, Wis
So.-Wn. Divs.: D. L. Bush, *Supt* ..... Racine, Wis.
John Taylor, *M. M* ..... Racine, Wis.
E. A. Eddy, *M. C. B* ..... Racine, Wis.
Northern Div.: L. B. Rock, *Supt.* Milwaukee, Wis.
Wm. E. Kittredge, *M. C. B.* Milwaukee, Wis.
Chicago, Pekin & So. R. R. 4-8½ g. 88 m. 8 lo. 455 c.
A. H. Crocker, *Rec* ..... Joliet, Ill.
J. R. Chilcote, *M. C. B* ..... Streator, Ill.
Chicago, Rock Island & Pac. Ry.
4-8½ g. 1,381 m. 300 lo. 7,790 cars.
R. R. Cable, *V. P. & Gen. Man* ..... Chicago, Ill.
A. Kimball, *Gen. Supt* ..... Chicago, Ill.
H. F. Royce, *Asst. G. Supt* ..... Davenport, Ia.
F. A. Smith, *Pur. Agt* ..... Chicago, Ill.
T. B. Twombly, *Gen. M. M* ..... Chicago, Ill.
B. K. Verbryck, *Gen. M. C. B* ..... Chicago, Ill.
Ill. Div.: R. H. Chamberlin, *Supt* ..... Chicago, Ill.
R. Biester, *M. M* ..... Chicago, Ill.
Sam'l Pullman, *M. C. B* ..... Chicago, Ill.
Ia. Div.: Jno. Given, *Supt* ..... Des Moines, Ia.
J. G. Crockett, *M. M* ..... Stuart, Ia.
Jas. F. Morrill, *M. M* ..... Davenport, Ia.
Chas. M. Leonard, *M. C. B* ..... Davenport, Ia.
So.-Wn. Div.: G. F. Walker, *Supt* ..... Trenton, Ia.
R. O. Carscallin, *M. M* ..... Trenton, Mo.
Chas. R. Best, *M. C. B* ..... Trenton, Mo.
K. & Des. M. Div.: Jno. Given, *Supt.* Des Moines, Ia.
S. W. Wakefield, *M. M* ..... Keokuk, Ia.
Henry Hamilton, *M. C. B* ..... Keokuk, Ia.
Chi., Saginaw & Can. R. R. 4-8½ g. 38 m. 4 lo. 16 c.
J. A. Elwell, *Gen. Man. & Pur. Agt* St. Louis, Mich.
Jas. T. Anderson, *Acting Supt* ..... St. Louis, Mich.
Chicago, St. Louis & New Orleans R. R.
4-8½ g. 571 m. 101 lo. 1,913 cars.
J. C. Clarke, *Gen. Supt. & G. Man.* New Orleans, La
L. T. Brien, *Asst. Gen. Man.* New Orleans, La.
C. M. Sheafe, *Gen. Supt* ..... New Orleans, La.
H. B. Pellgee, *Pur. Agt* ..... New Orleans, La.
W. H. Purdy, *Supt. Mach.* McComb City, Miss.
Geo. W. Baxter, *M. C. B* ..McComb City, Miss.
So. Div.: E. Anderson, *Acting Supt* ..... do.
W. P. McKinley, *M. M* ..McComb City, Miss.
No. Div.: G. G. Mann, *Supt* ..... Jackson, Tenn.
J. M. Keith, *M. M* ..... Jackson, Tenn.
J. F. White, *M. M* ..... Water Valley, Miss
Chicago, St. Louis & Pittsburg.
Jas. McCrea, *Man* ..... Columbus, O.
Wm. Mullins, *Pur. Agt* ..... Pittsburg, Pa.
Chicago, St. Paul, Minneapolis & Omaha Ry.
4-8½ g. 1,037 m. 131 lo. 4,688 cars.
J. M. Whitman, *Gen. Supt* ..... St. Paul, Minn.
W. H. S. Wright, *Pur. Agt* ..... St. Paul, Minn.
Matt. Ellis, *M. M* ..... St. Paul, Minn.
W. B. Rice, *M. C. B* ..... St. Paul, Minn.
Ea. Div.: A. A. Robart, *Supt* ..... St. Paul, Minn.
No. Div.: T. F. Gere, *Supt* ..... St. Paul, Minn.
St. P. and S. C. Div.:
H. Spencer, *Supt* ..... St. James, Minn.
F. W. Heintzelman, *Gen. For. Sh.* Sioux Cy, Ia.
Neb. Div.: G. V. Morford, *Supt* ..... Omaha, Neb.
Chicago, Texas & Mexican Central Ry.
4-8½ g. 52 m. 4 lo. 60 cars.
Gen. Supt ..... Dallas, Tex.
Chas. Howard, *Pur. Agt* ..... Chicago, Ill.
Chicago & Alton R. R. 4-8½ g. 840 m. 213 lo. 6,148 c.
J. C. McMullin, *Gen. Man* ..... Chicago, Ill.
C. H. Chappell, *Act. Gen. Man* ..... Chicago, Ill.
W. F. Merrill, *Gen. Supt* ..... Chicago, Ill.
A. V. Hartwell, *Pur. Agt* ..... Chicago, Ill.
Wm. Wilson, *Supt. of Mach* ..Bloomington, Ill.
Jos. Townsend, *G. For. Car Dept* ..... do.
Chi. Div.: A. M. Richards, *Supt* Bloomington, Ill.
St. Louis Div.: T. M. Bates, *Supt.* Roodhouse, Ill.
Wm. McPhail, *M. M* ..... Slater, Mo.
Chicago & Atlantic.
J. Condit Smith, *Gen. Man* ..... Chicago, Ill.
East. Div.: J. H. Tinney, *Supt.* Huntington, Ind
West. Div.: J. H. Parsons, *Supt* ..... Chicago, Ill.
R. C. Ackley, *M. M* ..... Huntington, Ind.
J. L. Adams, *M. C. B* ..... Huntington, Ind.
Chi. & East'n Ill. 4-8½ g. 248 m. 56 lo. 3,500 cars.
O. S. Lyford, *Gen. Supt* ..... Chicago, Ill.
D. R. Patterson, *Pur. Agt* ..... Chicago, Ill.
P. W. Drew, *M. Trans* ..... Chicago, Ill.
Allen Cooke, *M. M* ..... Danville, Ill.
Chicago & Grand Trunk Ry. *(See Grand Trunk.)*
Chicago & Iowa R. R. 4-8½ g. 104 m. 16 lo. 257 cars.
T. J. Potter, *Gen. Man* ..... Chicago, Ill.
W. H. Holcomb, *Gen. Supt* ..... Rochelle, Ill.
H. S. Bryan, *M. M* ..... Aurora, Ill.
Chicago & Northwestern Ry.
4-8½ g. 3,476 m. 558 lo. 18,085 cars.
Marvin Hughitt, *Gen. Supt. & P

BENJAMIN ATHA, Treasurer. RICHARD VOSE, President.

We make our own Steel for Car Springs.



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OFFICE, 13 BARCLAY STREET, NEW YORK.

IN THE PATENT FIGHT

BETWEEN

D. A. HOPKINS, of 113 Liberty Street, N. Y.,

PATENTEE AND MANUFACTURER OF

SELF-FITTING JOURNAL BEARINGS,

AND

T. V. LE ROY,

A SECOND DECISION WAS RENDERED JUNE 7, 1881,

IN FAVOR OF HOPKINS.

The closing paragraphs of said decision read as follows:

"As the proofs stand, therefore, Hopkins was the first to conceive, the first to disclose to others, the first to embody in models, the first to reduce to practice, and the first to apply for a patent. Le Roy was first to obtain a patent, but under circumstances which do not give him the prima facie case which a patent usually implies."

"We must find priority of invention to be with D. A. Hopkins, and affirm the examiner's decision."

H. H. BATES,
R. L. B. CLARKE,
R. G. DYRENFORTH,
Examiners-in-Chief.

POLAR GREASE NO. 1.

After years of practical experience in manufacturing HOT BOX CURES AND JOURNAL LUBRICANTS, we do not hesitate to stake our reputation on the statement that

POLAR GREASE NO. 1 POSSESSES MORE MERIT AS A

HOT BOX CURE,

And yields a greater mileage as a JOURNAL LUBRICANT than any compound now sold.

FOR HOT BOX CURE, apply to journal under all circumstances, and in similar manner as when tallow is used—it will do a better service.

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MANUFACTURERS OF ALL KINDS OF
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PITTSBURGH, PA.

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We have made but ONE QUALITY of WHITE LEAD for the last twenty-five years. It is ground in Refined Linseed Oil, and warranted perfectly pure.

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Concord R. R. ..... 4-8½ g. 141 m. 37 lo. 1,010 cars
H. E. Chamberlain, *Supt. & P. Agt.* Concord, N. H.
J. T. Gordon, *M. M. & C. B.* ..... Concord, N. H.
Conn. River and Ver. Val. R. Rs. ..... 4-8½ g. 130 m. 83 lo. 456 c
J. Mulligan, *Supt. & Pur. Agt.* Springfield, Mass
W. H. Stearns, *M. M.* ..... Springfield, Mass
Robert Hitchcock, *M. C. B.* ..... Springfield, Mass
Connotton Valley R. R. ..... 3 g. 160 m. 26 lo. 896 cars.
Samuel Briggs, *Gen. Man.* ..... Canton, O.
S. C. Bosworth, *M. M.* ..... Cant'n, O.
Cornwall R. R. ..... 4-8½ g. 9 m. 5 lo. 166 cars
Frank Donahue, *G. Supt. & M. M.* ..... Cornwall, Ont.
Levi Hionch, *M. C. B.* ..... Lebanon, Pa.
Credit Valley Ry. ..... 4-8½ g. 184 m. 22 lo. 535 cars.
James Ross, *Gen. Supt.* ..... Toronto, Ont.
John Macnab, *Pur. Agt.* ..... Toronto, Can.
H. G. Taylor, *Mech. Supt* ..... Toronto, Can
Crown Point Iron Co. R. R. ..... 3 g. 23 m.
A. L. Inman, *Gen. Man.* ..... Plattsburg, N. Y.
J. M. Davies, *Supt. & M. M.* Crown Point, N. Y.
J. C. Sherman, *M. C. B.* ..... Crown Point, N. Y.
Cumberland Valley R. R. ..... 4-9 g. 125 m. 21 lo. 430 cars.
J. F. Boyd, *Supt* ..... Chambersburg, Pa.
A. S. Hill, *M. M.* ..... Chambersburg, Pa.
C. Wickey, *F. C. R.* ..... Chambersburg, Pa.
Cumberland & Penn. R. R. ..... 4-8½ g. 55 m. 28 lo. 625 c.
P. L. Purnell, *Gen. Supt & P. A.* ..... Cumberland, Md.
N. W. Howson, *Mast. of Mach.* ..... Mt. Savage, Md.
Nathan Binix, *M. C. B.* ..... Mt. Savage, Md.

D

Danbury & Norwalk R. R. ..... 4-8½ g. 33 m. 6 lo. 100 c
W. Sandiforth, *G. Supt. & P. A.* ..... Norwalk, Ct.
N. M. George, *M. & C. B.* ..... Danbury, Conn.
Danville, Mocksville & So. Wn. R. R. ..... 3 g. 28 m.
H. W. Goodrich, *Ch. Engr.* ..... Leaksville, N. C.
Danville, Olney & O. R. R. R. ..... 4-8½ g. 110 m. 4 lo. 83 c.
Chas. Howard, *Rec. & Man.* ..... Olney, Ill.
J. M. Graham, *Supt.* ..... Kansas, Ill.
Louis Parisoe, *M. M & C. B.* ..... Kansas, Ill.
Dayton & Union R. R. ..... *(See Ohio Ry.)*
Del., Lackawanna & W. and N. Y., Lack. & W. R. Rs. ..... 4-8½ g. 670 m. 348 lo. 26,187 cars.
Wm. F. Halstead, *Gen. Supt.* ..... Scranton, Pa.
Wm. B. Cushing, *Asst. Gen. Supt.* ..... New York, N. Y.
Walter Dawson, *Mast. of Mach.* ..... Scranton, Pa.
Robt. McKenna, *M. C. B.* ..... Scranton, Pa.
Bloomsb'g Div.: C. Graham, *M. M.* ..... Kingston, Pa.
Utica Div.: A. C. Salisbury, *Supt.* ..... Utica, N. Y.
Thos. Thatcher, *M. M.* ..... Utica, N. Y.
Morris & Essex Div.: Sussex: P. & D. and C. R. Rs.
A. Reasoner, *Supt.* ..... Hoboken, N. J.
W. H. Lewis, *M. M.* ..... Kingsland, N. J.
J. W. Baker, *Mast. Car Rep.* ..... Dover, N. J.
Oswego & Syracuse Div.:
W. B. Phelps, *Supt.* ..... Oswego, N. Y.
Jas. Buchanan, *M. M.* ..... Syracuse, N. Y.
Syracuse, Binghamton & New York R. R.
4-8½ g. 81 m. 20 lo. 598 cars.
W. K. Niver, *Gen. Supt* ..... Syracuse, N. Y.
Jas. Buchanan, *M. M.* ..... Syracuse, N. Y.
Delaware & Hudson Canal Co. .....
4-3 and 4-8½ g. 590 m. 151 lo. 9,248 cars.
C. F. Young, *Gen. Man.* ..... Honesdale, Pa.
C. F. Young, *Pur. Agt.* ..... Albany, N. Y.
R. C. Blackall, *Supt. of Mach.* ..... Albany N. Y.
Susq. Div.: C. D. Hammond, *Supt.* Albany, N. Y.
C. A. Jones, *M. M.* ..... Oneonta, N. Y.
J. R. Skinner, *M. C. B.* ..... Oneonta, N. Y.
Sar. & Ch. Divs.: T. Voorhees, *Supt.* ..... Troy, N. Y.
J. L. Corey, *M. M.* ..... Green Island, N. Y.
Chr. Körner, *M. C. B.* ..... Green Island, N. Y.
Pa. Div.: R. Manville, *Supt & Pur. Agt.* and
S. H. Dotterer, *M. M* ..... Carbondale, Pa.
T. Orchard, *M. C. B.* ..... Carbondale, Pa.
Denver & New Orleans. 4-8½ g. 140 m. 11 lo. 400 c
C. W. Fisher, *Gen. Man.* ..... Denver, Col.
Chas. Wheeler. *Pur. Agt* ..... Denver, Col.
S. P. Weller. *M. M. & M. C. B.* ..... Denver, Col.
Denver & Rio Grande Ry. 3 g. 1,062 m. 170 lo. 4,000 c
D. C. Dodge, *Gen. Man.* ..... Denver, Col.
R. B. Cable, *Gen. Supt* ..... Denver, Col.
Henry Wood, *Supt. Utah Lines* S. L. City, Utah
A. B. Garner, *Pur. Agt.* ..... Denver, Col.
N. W. Sample, *M. M.* ..... Denver, Col.
1st Div.: W. H. Bancroft, *Supt.* .. S. Pueblo, Col.
2d Div.: Cole Lydon, *Supt* ..... Alamosa, Col.
3d Div.: G. W. Cook, *Supt* ..... Leadville, Col.
4th Div.: R. M. Ridgway, *Supt* ..... Salida, Col.
5th Div.: J. A. Myers
Des Moines & Ft. Dodge. 4-8½ g. 143 m. 13 lo. 232 c
C. S. Gilmore, *Supt* ..... Des Moines, Ia.
John McGrayel, *M. M.* ..... Grand Junction, Ia.
E. A. Avery, *M. C. B.* ..... Grand Junction, Ia.
Det., Gr. H. & Mil. Ry. ..... 4-8½ g. 180 m. 10 lo. 478 c
G. R. Nash, *Gen. Man.* ..... Detroit, Mich.
John S. Lorimer, *Storekeeper* ..... Detroit, Mich.
W. J. Morgan, *Supt.* ..... Detroit, Mich.
F. Parker, *Mech. Supt* ..... Detroit, Mich.
Det., Lansing & No'n R. R. 4-8½ g. 223 m. 84 lo. 1027 c
John B. Mulliken, *Gen. Man.* ..... Detroit, Mich.
Allan Bourn, *Pur. Agt* ..... Detroit, Mich.
Thos. M. Fish, *Gen. Supt* ..... Ionia, Mich.
G. C. Watrous, *M. M. & C. B* ..... Ionia, Mich.
Det., Mack. & Marq. R. R. 4-8½ g. 151 m. 16 lo. 1112 c.
D. McCool, *Gen. Supt & P. A.* Marquette, Mich.
John Wilson, *Mech. Supt* ..... Marquette, Mich.
Dorchester & Delaware R. R. ..... 4-8½ g. 33 m.
Thos. E. Wright, *Supt* ..... Cambridge, Md.
Dubuque & Dakota R. R. 4-8½ g. 64 m. 2 lo. 54 cars.
A. C. Goodrich, *Supt* ..... Waverly, Ia.
W. S. Couch, *Pur. Agt* ..... Dubuque, Ia.
Duck River Valley R. R. ..... 3 g. 34 m.
Geo. Childress, *Supt* ..... Columbia, Tenn.
Dunkirk, Allegheny Valley & Pittsburgh R. R.
4-8½ g. 91 m. 14 lo. 105 cars.
D. Thayer, *Gen. Supt* ..... Dunkirk, N. Y.
R. C. Moore, *Pur. Agt* ..... New York, N. Y.
J. C. Haggett *M. M. & C. B.* .... Dunkirk, N. Y.

E

East Broad Top R. R. ..... 3 g. 30 m. 6 lo. 191 cars.
A. W. Sims, *Supt* ..... Orbisonia, Pa.
B. B. Greenwood, *M. M.* ..... Orbisonia, Pa.
East Tennessee, Virginia & Georgia R. R.
5 g. 1,185 m. 153 lo. 1,397 cars.
Henry Fink, *V. P. & Gen. Man.* Lynchburg, Va.
J. F. O'Brien, *Gen. Supt* ..... Knoxville, Tenn.
W. A. Harrison, *Pur. Agt* ..... Knoxville, Tenn.
East Tenn. Div. and No. Car. and Ohio Branches:
F. K. Huger, *Supt.* ..... Knoxville, Tenn.
B. J. Sitton, *M. M.* ..... Knoxville, Tenn.
Jas. Armbruster, *M. C. B.* ..... Knoxville, Tenn.
Alabama Div. : J. M. Bridges, *Supt* ..... Selma, Ala.
Simon Gay, *M. M.* ..... Selma, Ala.
W. W. Pierce, *M. C. B.* ..... Selma, Ala.
Memphis & Charleston R. R. (Div.):
R. B. Pegram, Jr., *Supt* ..... Memphis, Tenn.
H. N. Burford, *M. M.* ..... Memphis, Tenn.
Atlanta & Brunswick Divs.:
Atl. Div.: Theo. D. Kline, *Supt* ..... Atlanta, Ga.
Br. Div.: J. E. Mallory, *Supt* ..... Macon, Ga.
C. H. Beale, *M. M.* ..... Macon, Ga.
W. J. Rogers, *M. M.* ..... Atlanta, Ga.
East & West R. R. of Alabama.
John Postell, *Manager* ..... Cross Plain, Ala.
Eastern R. R. ..... 4-8½ g. 283 m. 99 lo. 3,078 cars.
Payson Tucker, *Gen. Man.* ..... Boston, Mass.
D. W. Sanborn, *Mast. of Trans.* Boston, Mass.
G. F. Hurd, *Purc. Agt* ..... Boston, Mass.
Amos Pillsbury, *R. M. P. & M.* ..E. Boston, Mass.
J. D. Billings, *G. For. Car Dept* ..Salem, Mass.
Conl. Div.: J. W. Sanborn, *Supt.* Wolfboro', N. H.
Eastern Kentucky R. R. ..... 4-8½ g. 34 m. 3 lo. 125 c.
H. W. Bates, *Man. & Pur. Agt.* ..... Riverton, Ky.
J. S. Weaver, *M. M.* ..... Kinzua, Ky.
Eastern Shore R. R. ..... 4-8½ g. 38 m. 2 lo.
W. Thompson, *Supt* ..... Princess Anne, Md.
Frank Stratton, *M. M.* ..... Princess Anne, Md.
Elberton Air-Line R.R. *(See Rich. & Dan. N. G. Rrs.)*
Erie & Pittsburg R. R. ..... *(See Penna. Co.)*
Eureka & Palisade R. R. ..... 3 g. 97 m. 7 lo. 154 cars.
B. Gilman, *Gen. Supt & Pur. Agt.* Eureka, Nev.
E. C. Mills, *M. M.* ..... Palisade, Nev.
A. S. Longley, *M. C. B.* ..... Palisade, Nev.
Europ. & No. Amer. Ry. ..... 4-8½ g. 114 m. 15 lo. 557 c.
F. W. Cram, *Supt. & Pur. Agt* .. Bangor, Me.
A. O. Bailey, *M. M & C. B* Mattawamkeag, Me.
Evansville, Paducah & Cairo Line. ..... 200 miles
G. J. Grammer, *Supt* ..... Evansville, Ind.
Evansville, Rockport & E'n Ry. 4-0 g. 71 m. 5 lo. 98 c.
H. L. Shepard, *Supt* ..... Evansville, Ind.
Evansv. & Terre Haute. ..... 4-8½ g. 145 m. 20 lo. 900 c.
C. J. Hepburn, *Gen. Supt* ..... Evansville, Ind.
John Torrance, *Gen. For* ..... Evansville, Ind.

F

Fitchburg R. R. ..... 4-8½ g. 180 m. 100 lo. 3,315 cars.
John Adams, *Gen. Supt* ..... Boston, Mass.
E. K. Turner, *Asst. Supt* ..... Fitchburg, Mass.
F. S. Pratt, *Pur. Agt* ..... Boston, Mass.
G. A. Coolidge, *Supt. M. P.* ..... Boston, Mass.
W. A. Foster, *Asst. Supt. M. P.* Fitchburg, Mass.
W. Marden, *M. C. B* ..... Charlestown, Mass.
Flint & Pere Marq. 4-8½ g. 345 m. 68 lo. 1,854 cars.
H. C. Potter, *Gen. Man* ..... E. Saginaw, Mich.
D. Edwards, *Asst. Gen. Man.* E. Saginaw, Mich.
G. G. Cook, *Pur. Agt* ..... E. Saginaw, Mich.
Sanford Keeler, *Gen. Supt.* .E. Saginaw, Mich.
W. F. Potter, *Supt.* (E. Div.) .E. Saginaw, Mich.
M. V. Meredith, *Supt.* (W. Div.)E. Saginaw, Mich.
T. J. Hatswell, *M. M* ..... E. Saginaw, Mich.
R. McFarlane, *M. C. B* ..... E. Saginaw, Mich.
Florida Central & Western R. R.
5 g. 234 m. 16 lo. 160 cars.
Wm. M. Davidson, *Gen. Man.* Jacksonville, Fla.
Jas. S. McElroy, *Supt.* ..... Tallahassee, Fla.
Florida Southern Ry. ..... 3 g. 91 m. 6 lo. 96 cars.
H. S. Haines, *Gen. Supt* ..... Palatka, Fla.
Jas. D. Hollister, *Supt* ..... Palatka, Fla.
M. R. Miller, *M. M. & C. B* ..... Palatka, Fla.
Florida Transit R. R. ..... 3 g. 224 m.
D. E. Maxwell, *Gen. Supt* ..... Fernandina, Fla.
John Hedges, *Pur. Agt* ..... Fernandina, Fla.
R. V. Dabney, *M. M* ..... Fernandina, Fla.
G. Hernandez. *M. C. B* ..... Fernandina, Fla.
Fonda, Johnst'n & Gloversv. 4-8½ g. 26 m. 5 lo. 18 c.
Lawton Cater, *Supt.* ..... Gloversville, N. Y.
Fond du Lac, Amboy & Peoria. 3 g. 30 m. 2 lo. 35 c.
Alonzo Kinyon, *Supt. & P. A.* Fond du Lac, Wis.
Fort Dodge & Fort Ridley R. R. ..... 4-8½ g.
G. R. Pearson, *Supt* ..... Fort Dodge, Ia.
Ft. Madison & No. West'n Ry. 3 g. 41 m. 4 lo. 130 c.
S. B. Keuck, *Supt. & Pur. Agt.* Ft. Madison, Ia.
I. L. Lamb, *M. M. & C. B* ..... Ft. Madison, Ia.
Ft. Wayne, Cin. & Louisv. 4-8½ g. 108 m. 9 lo. 249 c.
White Water Div. 4-8½ g. 62 m. 3 lo. 170 cars.
W. W. Worthington, *Gen. Supt* ..... Ft. Wayne, Ind.
T. H. Haberkorn, *M. M.* ..... Ft. Wayne, Ind.
Wm. Wright, *M. C. B.* ..... Ft. Wayne, Ind.
Fulton County N. G. Ry. ..... 3 g. 61 m. 3 lo. 106 cars.
A. C. Atherton, *Gen. Supt. & P. Agt.* Lewiston, Ill.

G

Galveston, Harrisburg & San Antonio Ry.
4-8½ g. 492 m. 47 lo. 1870 cars.
A. N. Towne, *Gen. Man* ..... Houston, Tex.
E. G. Thompson, *Supt* ..... Houston, Tex.
El Paso Div.: Jas. Campbell, *Supt.* .El Paso, Tex.
J. L. Bonner, *M. M* ..... El Paso, Tex.
San Anto. Div.: W. G. Van Vleck, *Supt.*
San Antono, Tex.
J. J. Ryan, *M. M* ..... San Antonio, Tex.
Houston Div.: H. Flanders, *Supt.* Harrisburg, Tex.
D. T. Davis, *M. M* ..... Harrisburg, Tex.
Louisiana Div.: W. Irwin, *Supt.* ..... Houston, Tex.
D. C. Smith, *M. M* ..... Houston, Tex.
Galveston, Houston & Henderson R. R.
4-8½ g. 50 m. 17 lo. 212 cars.
W. H. Harding, *G. Man. & P. Agt* Galveston, Tex.
Allen McCoy, *Supt.* ..... Galveston, Tex.
J. G. Conlon, *M. M.* ..... Galveston, Tex.
Geneva, Ithaca & Sayre R. R. ..... *(See Lehigh Val.)*
Georgia R. R. ..... 5 g. 307 m. 42 lo. 958 cars.
John W. Green, *Gen. Man* ..... Augusta, Ga.
John S. Cook, *M. M.* ..... Augusta, Ga.
T. M. Preval, *M. C. B.* ..... Augusta, Ga.
Georgia Pacific Ry. (Miss. Div.). 3 g. 43 m. 2 lo. 44 c.
G. J. Forward, *Supt.* ..... Atlanta, Ga.
W. M. Sutton, *Pur. Agt* ..... Greenville, Miss.
Benj. Davis, *M. M* ..... Greenville, Miss.
J. B. Shelton, *M. C. B.* ..... Greenville, Miss.
Grand Haven R. R. ..... *(See Chic. & W. Mich.)*
Grand Junction Ry. ..... *(See Midland of Can.)*
Grand Rap. & Ind. and Cin. & I. R. R. *(See Ft. Wayne, C. & W. Jt.)*
Grand Rapids & Indiana. 4-8½ g. 456 m. 52 lo. 1,566 c.
W. O. Hughart. *Gen. Man.* Grand Rapids, Mich.
W. R. Shelby, *Pur. Agt.* ..... Grand Rapids, Mich.
S. D. Bradley, *M. M* ..... Grand Rapids, Mich.
No'n Div.: J. C. McIlhenny, *Supt.* Fond Du Lac, Wis.
So'n Div.: P. S. O'Rourke, *Supt.* Fort Wayne, Ind.
Grand Tower & Carbondale. 4-8½ g. 25 m. 6 lo. 357 c.
T. M. Williamson, *Supt. & P. A.* Gr. Tower, Ill.
Hugh Smith, *M. M. & C. B* ..... Grand Tower, Ill.
Grand Trunk Ry. ..... 4-8½ g. 2,321 m. 434 lo. 9,403 c.
Joseph Hickson, *Gen. Man* ..... Montreal, Can.
Wm. Wainright, *Asst. Man* ..... Montreal, Can.
Gr. Tr. Divs.: W. J. Spicer, *Supt.* Montreal, Can.
Jno. Taylor, *Gen. Storekeeper* Montreal, Can.
Herbert Wallis, *Mech. Supt* ..Montreal, Can.
Wm. McWood, *Supt. Car Dept.* Montreal, Can.
F. R. Parrow, *Mon. Lo. Wks* Montreal, Can.
J. Haskoni, *Div. M. S* ..... Richmond, P. Q.
F. L. Wanklyn, *Div. M. S.* ..... Brockville, Ont.
J. Davis Barnett, *Div. M. S* ..... Stratford, Ont.
Chi. & Gr. Trunk Ry. 4-8½ g. 330 m. 56 lo. 1,191 c.
S. R. Callaway, *Gen. Man.* ..... Chicago, Ill.
W. H. Pattinson, *Supt* ..... Battle Creek, Mich.
A. Judd, *Pur. Agt* ..... Fort Gratiot, Mich.
H. Roberts, *Asst. M. S* ..... Port Huron, Mich.
Great West'n Div. 4-8½ g. 823 m. 310 lo. 5,000 c.
Chas. Stiff, *Supt* ..... Hamilton, Ont.
E. R. Baines, *Store Kpr.* ..... London, Ont.
C. K. Donnylle, *Mech. Supt* ..... Hamilton, Ont.
C. F. Hanson, *Lo. For* ..... London, Ont.
J. D. McIlwain, *Supt. Car Dept* ..London, Ont.
Green Bay, Winona & St. Paul R. R.
4-8½ g. 250 m. 19 lo. 599 cars.
Timothy Case, *Gen. Man. & P. A* Green Bay, Wis.
A. Fenwick, *M. M* ..... Green Bay, Wis.
Gulf, Col. & Santa Fé Ry. 4-8½ g. 536 m. 43 lo. 1,400 c.
John Sealy, *Gen. Man.* ..... Galveston, Texas.
F. P. Killeen, *Asst. Gen. Man.* Galveston, Texas.
Jno. W. Thorne, *Pur. Agt.* ..... Galveston, Texas.
G. B. Nichols, *M. M* ..... Galveston, Texas.
W. H. Martin, *M. C. B.* ..... Galveston, Texas.
Gulf, W'n Texas & Pac. Ry. 4-8½ g. 68 m. 6 lo. 70 c.
M. D. Monserrate, *Pr. & Supt.* ..... Cuero, Texas.
James Mooney, *M. M* ..... Cuero, Texas.

H

Halifax & Cape Breton Ry. 4-8½ g. 70 m. 9 lo. 208 c.
H. Abbott, *Manager* ..... New Glasgow, N. S.
Hannibal & St. Jo. R. R. 4-8½ g. 202 m. 76 lo. 1,800 c.
John B. Carson, *Gen. Man* ..... Hannibal, Mo.
W. R. Woodard, *Supt* ..... Hannibal, Mo.
T. L. Dunn, *Ch. Engr. & Pur. Agt.* Hannibal, Mo.
Jas. Long, *Supt. M. P. & Car Dep* Hannibal, Mo.
Hanover Junction, Hanover & Gettysburg R. R.
4-8½ g. 74 m. 9 lo. 106 cars.
H. D. Scott, *Gen. Supt* ..... Hanover, Pa.
John F. Bingley, *M. M* ..... Hanover, Pa.
Henry Britcher, *M. C. B* ..... Hanover, Pa.
Harrisburg & Potomac R. R. 4-8½ g. 35 m. 3 lo. 34 c.
Wm. H. Rudy, *Supt* ..... Rolling Springs, Pa.
Hartford & Conn. Val. R. R. 4-8½ g. 45 m. 9 lo. 196 c.
Samuel Babcock, *Pr. & Gen. Man.* Hartford, Ct.
Levi Woodbridge, *Asst. Supt* ..... Hartford, Ct.
S. E. Brewer, *M. M. & C. B* ..... Hartford, Conn.
Hartford & Conn. W'n R. R. 4-8½ g. 110 m. 405 c.
John F. Bingley, *M. M* ..... Hanover, Pa.
J. C. Barton, *M. M* ..... Hartford, Ct.
Housatonic R. R. ..... 4-8½ g. 126 m. 22 lo. 405 cars.
W. H. Seymans, *Supt* ..... Bridgeport, Ct.
D. S. Draper, *Pur. Agt* ..... Bridgeport, Ct.
N. Slingland, *M. M* ..... Falls Village, Ct.
J. J. Hathorn, *M. M.* ..... Falls Village, Ct.
Houston Belt Ry ..... 4-8½ and 3 gauge 50 miles.
S. L. Werden, *V. P. & Gen. Man.* Houston, Tex.
Houston, East & West Tex. Ry. 3 g. 120 m. 10 lo. 278 c.
Paul Bremond, *Pr. & Pur. Agt.* Houston, Tex.
E. L. Bremond, *Gen. Man* ..... Houston, Tex.
B. O. Duffey, *M. M* ..... Houston, Tex.
C. F. Schelewa, *M. C. B.* ..... Houston, Texas.
Houston & Tex. Cen. Ry. 4-8½ g. 78 lo. 2,500 c.
J. Waldo, *V. Pr. & Gen. Man.* .. Houston, Tex.
A. H. Swanson, *Gen. Tr. Man.* ..... Houston, Tex.
E. S. Larchar, *Pur. Agt* ..... New York, N. Y.
L. C. Noble, *Gen. M. M.* ..... Houston, Tex.
James McGee, *M. C. B* ..... Houston, Tex.
So. & Wn. Divs.: M. G. Howe, *Supt.* Houston, Tex.
No. & Mt. Divs.: G. A. Quinlan, *Supt.* Dallas, Tex.
C. H. Burns, *Asst. M. M* ..... Corsicana, Tex.
No. Wn. Div.: Donald Allen, *Supt.* .... Waco, Tex.
Humeston & Shenandoah R. R.
4-8½ g. 85 m. 5 lo. 72 cars.
F. O. Wyatt, *Gen. Man* ..... Clarinda, Ia.
M. B. Snyder, *M. M* ..... Clarinda, Ia.
Huntingdon & Br. Top Mt. 4-8½ g. 62 m. 18 lo. 69 c.
Geo. F. Gage *Gen. Supt* ..... Huntingdon, Pa.
Samuel F. Knight, *Pur. Agt.* .Philadelphia, Pa.
William Barkla. *M. M* ..... Saxton, Pa.

I

Illinois Central R. R. 4-8½ g. 1,554 m. 224 lo. 6,172 c.
Jas. C. Clark, *Gen. Man* ..... Chicago, Ill.
E. T. Jeffery. *Gen. Supt* ..... Chicago, Ill
C. A. Beck, *Asst. Gen. Supt* ..... Chicago, Ill
O. Ott, *Pur. Agt* ..... Chicago, Ill
Henry Schlacks, *S. of Mach* ..... Chicago, Ill.
W. B. Spence *M. M. Pullman Car Works* ..... Chicago, Ill.
Chic. Div.: T. J. Hudson, *Supt* ..... Cairo, Ill.
Wm. Renshaw. *Act. M. M* ..... Chicago, Ill.
Mid. Div.: H. L. Fishle, *Supt.* ..... Pontiac, Ill.
Spring. Div.: W. Wilkinson, *Supt.* Springfield, Ill.
W. B. McKenna, *M. M* ..... Clinton, Ill.
No'n Div.: C. Jeffrey, *Supt* ..... Amboy, Ill.
J. B. Edams, *M. M* ..... Amboy, Ill.
So. Div.: David Oxley, *M. M.* ..... Centralia, Ill.
Ia. Div.: M. Gilleas, *Supt.* ..... Dubuque, Ia.
Thos. W. Place, *M. M* ..... Waterloo, Ia.
Illinois Midland Ry. ..... 4-8½ g. 176 m. 12 lo. 611 cars.
D. H. Conklin, *Rec. & Gen. Man.* ..Decatur, Ill.
O. E. Grady. *Train Mast* ..... Decatur, Ill.
Frank Young, *Pur. Shops* ..... Paris, Ill.
Illinois & St. Louis R. R. ..... 4-8½ g. 18 m. 5 lo. 402 c.
Thos. McKissock, *Gen. Man* ..... St. Louis, Mo.
C. H. Scharman, *Gen. Supt. & P. A.* St. Louis, Mo.
D. J. Timlin, *M. M* ..... Belleville, Ill.
Charles Rothe, *M. C. B* ..... E. St. Louis Ill
Indiana, Bloomington & Western Ry
4-8½ g. 212 m. 64 lo. 3,650 cars.
C. E. Henderson, *Gen. Man.* .Indianapolis, Ind.
J. H. Wilson, *Gen. Supt* ..... Indianapolis, Ind.
H. C. Norton, *Pur. Agt* ..... Indianapolis, Ind.
B. Warren, *Gen. M. M* ..... Indianapolis, Ind.
Peoria Div.: I. H. Wilson, *Supt.* .Indianapolis, Ind.
E. Hiserodt, *M. M* ..... Urbana, Ill.
St. Louis Div.: I. H. Wilson, *Supt.* ..Indnpls, Ind.
John King, *M. M* ..... Indianapolis, Ind.
Ohio Div.: D. R. Ennis, *Asst. Supt.* Springfield, Ill.
Jos. S. Porter, *M. M* ..... Sandusky, O.
Indiana, Illinois & Iowa R. R. ..... 41 miles.
F. M. Drake, *Gen. Man* ..... Kankakee, Ill
J. P. Shonts, *Supt* ..... Kankakee, Ill.
Indiana & Illinois Southern Ry ..... 3 g. 80 m.
W. C. Lyon, *Gen. Man. & P. Agt* Robinson, Ill.
J. S. Pickering, *M. M. & C. B.* ..Effingham, Ill.
Indianapolis & Vincennes R. R. ..... *(See Penna. Co.)*
Intercolonial Ry. ..... 4-8½ g. 846 m. 135 lo. 4,500 cars.
David Pottinger, *Chief Supt* ..... Moncton, N. B.
T. V. Cooke, *Gen. Storekeeper* .. Moncton, N. B.
H. A. Whitney, *Mech. Supt* ..... Moncton, N. B.
Ewd. Shaffer, *M. C. B* ..... Moncton, N. B.
Mono. Div.: J. E. Price. *Supt.* Camb'llton, N. B.
Hal. & St. J. Div.: Jas. Coleman, *Supt.* .Truro, N. B.
Levis Div.: A. McDonald, *Supt.* Riviere du Loup, Q.
International Ry. ..... 4-8½ g. 69 m. 2 lo. 12 cars.
D. E. McFee, *Supt* ..... Sherbrooke, Que.
International & Gt. N'n R. R. ..... *(See Mw. Pac. Ry.)*
Iron Mountain & Helena R. R. 4-8½ g. 27 m. 2 lo. 11 c.
Wm. Bailey, *Pres. & Gen. Man.* .Helena, Ark
D. Stillinger, *Supt* ..... Helena, Ark
F. M. Green, *Pur. Agt* ..... Helena, Ark
Wm. Summers, *M. C. B* ..... Helena, Ark.
Ithaca, Auburn & Western Ry. ..... 4-8½ g. 38 m.
Fred'k Peet, *Supt* ..... Auburn, N. Y.
Ira Dunning, *M. M* ..... Auburn, N. Y.

J

Jacksonville So.-E'n R. R. ..... 4-8½ g. 54 m. 5 lo. 68 c.
E. S. Greenleaf, *Supt* ..... Jacksonville, Ill.
Ira Petrie, *M. M* ..... Jacksonville, Ill.
Jackson, Pensacola & Mob. *(See Flor. Cent. & Pen. R. Rs.)*
Jamesville & Washington. 4-8½ g. 22 m. 3 lo. 24 c.
A. Fisher, *Manager* ..... Dymond City, N. C.
J. E. Langley, *M. M & C. B* ..... Dymond City, N. C.
Jeffersonv'l, Madison & Indpls. R. R. ..... *(See Pa. Co.)*
Jersey City & Albany R. R. ..... 4-8½ g. 38 m.
J. W. Gaullion, *Gen. Manager* ..Jersey City, N. J.
Junction & Breakwater; Breakwater & Frankford; and Worcester R. Rs. ..... 4-8½ g. 101 m. 6 l. 133 c.
J. & B. Rd.: Thos. Groome, *Supt.* ..... Lewes, Del.
Geo. Messick, *M. M* ..... Lewes, Del.
W. H. Virden, *M. C. B* ..... Lewes, Del.
B. & F. and W. Rds.: J. L. Mapes, *St.* Berlin, Md.

K

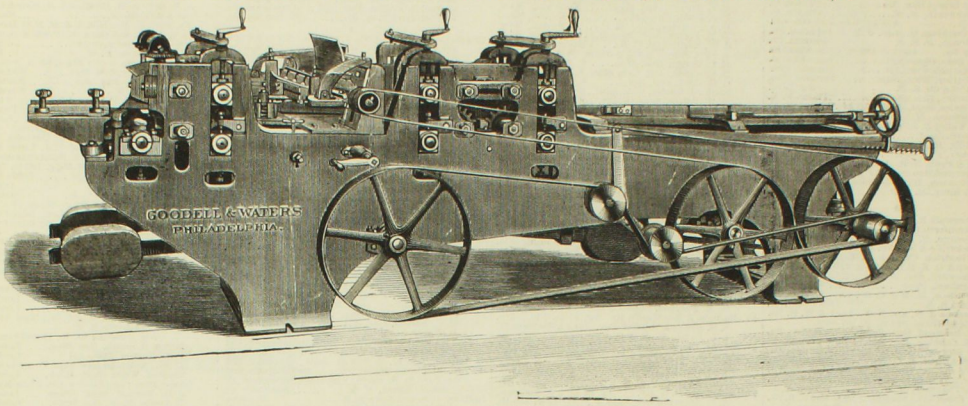
Kansas Central R. R. ..... *(See Union Pacific.)*
Kansas Cy, Lawrence & So. Kan. 4-8½ g. 396 m. 87 c.
C. C. Wheeler, *Gen. Man* ..... Topeka, Kan.
J. L. Barnes, *Supt* ..... Lawrence, Kan.
F. M. Smith, *Pur. Agt* ..... Topeka, Kan.
T. D. Volk, *M. M* ..... Ottawa, Kan.
Kansas City, Fort Scott & Gulf R. R. ..... 4-8½ g.
Geo. H. Nettleton, *Gen. Man.* Kansas City, Mo.
L. W. Towne, *Gen. Supt* ..... Kansas City, Mo.
H. P. Jacques, *Pur. Agt.* ..... Kansas City, Mo.
J. S. McCrum, *M. M* ..... Kansas City, Mo.
A. N. Montier, *C. B* ..... Kansas City, Mo.
Kansas City, St. Joseph & Council Bluffs; and St. Jo. & Des Moines R. Rs. ..... 4-8½ g. 368 m. 38 lo. 1,148 cars.
J. F. Barnard, *Gen. Supt. & P. A* St. Joseph, Mo.
F. A. Chase, *M. M* ..... St. Joseph, Mo.
Thos. Aylesbury, *G. For. Car. Dep* St. Joseph, Mo.
Kendall & Eldred R. R. ..... *(See Olean, B. & W.)*
Kent Co.; Sm. & Del. Bay Rds. 4-8½ g. 50 m. 2 lo. 13 c.
Fred'k Decker, *Gen. Man.* ..... Chestertown, Md.
Kentucky Central R. R. 4-9 g. 150 m. 20 lo. 508 cars.
G. W. Bender, *Supt* ..... Covington, Ky.
A. H. Watts, *F. of Mach* ..... Covington, Ky.
J. L. Hackathorn, *M. C. B* ..... Covington, Ky.
Kentucky & South Atlantic Ry. 3 g. 23 m. 3 lo. 52 c.
Geo. B. Harper, *Supt. & P. A.* Mt. Sterling, Ky.
S. P. Hatfield, *M. M* ..... Mt. Sterling, Ky.
Kinzua R. R. ..... *(See Olean, B. & W.)*
Kingston & Pembroke Ry. 4-8½ g. 63 m. 3 lo. 150 c.
B. W. Folger, *Supt* ..... Kingston, Ont.
C. Gildersleeve, *Pur. Agt* ..... Kingston, Ont.
Geo. Benson, *M. M* ..... Kingston, Ont.
Knox & Lincoln R. R. ..... 4-8½ g. 49 m. 5 lo. 95 cars.
C. A. Coombs, *Supt* ..... Bath, Me.
Wm. Palmer, *Pur. Agt* ..... Bath, Me.
C. L. Turner, *M. C. B* ..... Bath, Me.
Knoxville & Augusta R. R. 4-6 g. 16 m. 2 lo. 34 cars.
J. M. Hall, *Gen. Man.* ..... Knoxville, Tenn.
M. R. Hood, *Pur. Agt* ..... Knoxville, Tenn.

L

Lake Erie & Western Ry. 4-8½ g. 388 m. 43 lo. 1,526 c.
E. H. Waldron, *Gen. Man* ..... La Fayette, Ind.
E. H. Andrews, *Pur. Agt* ..... La Fayette, Ind.
H. L. Cooper, *Supt. of Equipment* ..Lima, O.
D. S. Hill, *Gen. Supt* ..... Sandusky, O.
Lake Shore & Michigan So'n Ry.
4-8½ g. 1,243 m. 546 lo. 17,115 cars.
John Newell, *Gen. Man* ..... Cleveland, O.
P. F. Whitcomb, *Supt* ..... Cleveland, O.
A. C. Armstrong, *Pur. Agt* ..... Cleveland, O.
James Sedgley, *Gen. M. M* ..... Cleveland, O.
John Hutchinson, *M. C. B* ..... Cleveland, O.
Buffalo Div.: C. B. Couch, *Supt* ..... Cleveland, O.
J. S. Graham, *M. M* ..... Buffalo, N. Y.
A. C. Johnson, *M. C. B* ..... Buffalo, N. Y.
Frank. Div.: G. H. McIntire, *Supt.* Stoneboro, Pa.
Erie Div.: C. B. Couch, *Supt* ..... Cleveland, O.
L. G. Wright, *M. M* ..... Cleveland, O.
J. Withycombe, *M. C. B* ..... Cleveland, O.
Toledo Div.: Thos. Flesher, Jr., *Supt.* Cleveland, O.
J. H. Woolhorn, *M. M* ..... Norwalk, O.
W. O. Smith, *M. C. B* ..... Norwalk, O.
Mich. Div., J. E. Curtis, *Supt* ..... Toledo, O.
Det. Div.: C. Harbeneworth, *Supt* Detroit, Mich.
Lansing Div.: W. H. Caniff, *Supt.* Lansing, Mich.
Western Div.: A. G. Amsden, *Supt* ..Chicago, Ill.
G. W. Stevens, *M. M.* (M.S. Divs.) Elkhart, Ind.
Frank O. Bray, *M. C. B* ..... Adrian, Mich.
Ft. Wayne Br.: W. H. Caniff, *Supt* Jackson, Mich.
Kalamazoo Div.:
M. E. Watles, *Supt* ..... Kalamazoo, Mich.
Lebanon Springs R. R. ..... 4-8½ g
W. C. Alstyne, *Manager* ..... Albany, N. Y.
J. K. Hotaling, *Pur. Agt* ..... Albany, N. Y.
Geo. Tefft, *M. M* ..... Chatham, N. Y.
Lehigh Valley R. R. 4-8½ g. 545 m. 321 lo. 33,817 c.
H. S. Goodwin, *Gen. Supt* ..... Bethlehem, Pa.
L. Chamberlain, *Pur. Agt* ..... Philadelphia, Pa.
John S. Lentz, *M. C. B* ..... Packerton, Pa.
N. J. Div.: Jas. Donnelly, *Supt.* Perth Amboy, N. J.
John I. Kinsey, *M. M* ..... So. Easton, Pa.
Coal Rds.: J. I. Blakeslee, *Supt.* Mauch Chunk, Pa.
P. Hofecker, *M. M* ..... Weatherly, Pa.
John Campbell, *M. M* ..... Delano, Pa.
B. M. Div.: A. G. Brodhead, *S.* Mauch Chunk, Pa.
D. Clark, *M. M* ..... Hazleton, Pa.
Wy. Div.: A. Mitchell, *S. & M. M.* Wilkesbarre, Pa.
Pa. & N. Y.; and Geneva

GOODELL & WATERS,

Manufacturers of Wood-Working Machinery.



KEYSTONE RAPID FEEDING FLOORER

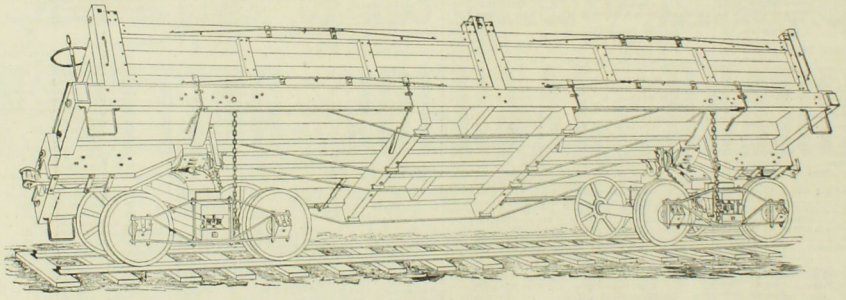
For RAILROAD SHOPS, CAR-BUILDERS, PLANING-MILLS, BRIDGE BUILDERS, SASH, DOOR and BLIND MAKERS.

SEND FOR NEW CATALOGUE.

GOODELL & WATERS, Thirty-First and Chestnut Streets, Philadelphia, Pa

THE U. S. CAR CO.'S SCREW LEVER DUMP AND COAL CAR.

SIMEON BROWNELL, President and General Manager. FRANK BROWNELL, Treasurer. M. VAN WORMER, Superintendent.



UNDERSIDE VIEW.

(M. VAN WORMER PATENTS.)

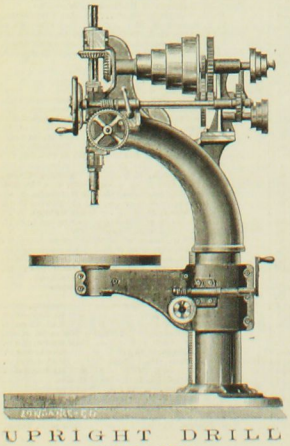
This car has a capacity of eighteen to twenty tons, and can be handled by one man, discharging its load instantly. The device can be applied to flat and grain cars. The car is under perfect control at all times, and can be held at any elevation or dumped suddenly if desired. For construction trains, cars with this device would be invaluable. The mechanism is strong, simple and durable. The following railroads and car-builders are building cars with this screw lever attachment, viz.:

Union Pacific Railway Co.
Lehigh Valley Railroad.
Main Central Railroad Co.
Billmeyer & Small Co., York, Pa.
Northern Pacific Railroad Co.
Gilbert Car Mfg. Co., Troy, N. Y.
Pontiac & Pacific Railway, Canada.
Boston & Maine R. R. Co.
Wells & French Car Co., Chicago.
Cleveland Rolling Mills Co., Cleveland.
Gill Car Mfg. Co., Columbus, Ohio.
Rock Island & Mercer County Railroad.
Ontario Car Co., London, Ontario, Canada.

UNITED STATES CAR COMPANY, 48 CONGRESS STREET, BOSTON, MASS.

HILL, CLARKE & CO.

OFFICES: 42 OLIVER STREET, BOSTON, MASS.
17 N. SIXTH STREET, PHILADELPHIA, PA.
800 N. SECOND STREET, ST. LOUIS, MO.

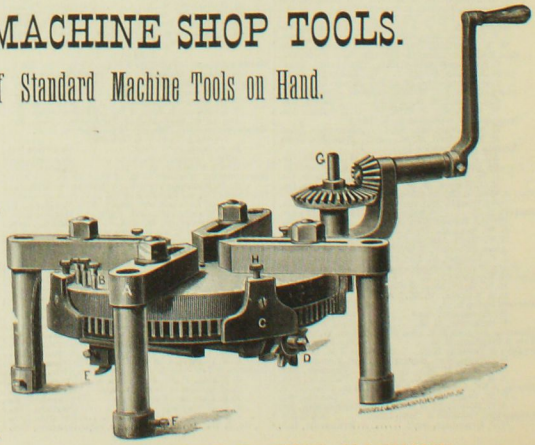


UPRIGHT DRILL
42 INCH SWING.

RAILROAD MACHINE SHOP TOOLS.

Large Stock of Standard Machine Tools on Hand.

ENGINE LATHES.
IRON PLANERS.
UPRIGHT DRILLS.
BOLT CUTTING AND NUT TAPPING MACHINERY.
MILLING MACHINES.
SHAPING MACHINES.
RADIAL DRILLS.



VALVE-SEAT FACING MACHINE.

Missouri Pacific Ry. (Leased and operated lines.)
4-8½ g. 5,870 m. 682 lo. 19,048 cars.
A. A. Talmage, *Gen. Man*.....St. Louis, Mo.
R. R. Lyle, *Pur. Agt.*.....St. Louis, Mo.
(1) Missouri Pac Ry. 4-8½ g. 2,708 m. 324 lo. 10,000 c
John Hewitt, *Supt. Mach*.....St. Louis, Mo.
John Hodge, *Supt. Car Dep*.....St. Louis, Mo.
Main Line, Warner Cumming, *Supt*.....Sedalia, Mo.
C. L. Dunham, *Supt* W'n Div.,Kansas City, Mo.
Le Roy Barrlett, *Asst. M. M.*.....St. Louis, Mo.
Geo. Walshe, *M. M.*.....Sedalia, Mo
M., K. & Tex. Div., J. M. Eady, *Supt* Sedalia, Mo.
J. C. Barker, *Asst Supt. Car Dep't*.....Sedalia, Mo.
J. W. Haines, *M. M.*.....Parsons, Kan.
Cen. Br. Div., W. W. Fagan, *Supt*.....Atchison, Kan.
H. V. Faries, *M. M.*.....Atchison, Kan.
S. Irvin, *Asst. Supt. Car Dep.*.....Atchison, Kan.
(1) St. L., I. M. & So. 4-8½ g. 859 m. 141 lo. 4,800 c.
Wm. Kerrigan, *Supt.*.....St. Louis, Mo.
O. A. Haynes, *S. M. P. & M.*.....De Soto, Mo.
St. Louis Div.: W. H. Harris, *M. M.*,De Soto, Mo.
Ark. Div.: R.M. Richardson, *M. M.*,Little Rock, Ark.
H. H. Sexsions, *M. C. B.*.....Marshall, Tex.
(2) Texas & Pac. 4-8½ g. 1,487 m. 144 lo. 3,076 c.
E. L. Dudley, *Supt.*.....Marshall, Tex.
O. A. Haynes, *S. M. P. & M.*.....Marshall, Tex
New Or. Div.: J. T. Wheion, *Supt*.Gouldsboro, La.
Marsh Stevens, *M. M.*.....Marshall, Tex.
Eastern Div.: J. Williams, *Supt*.....Longvi-w, Tex.
Rio Gr. Div.: g. O. Clinton, *Supt*.Big Springs, Tex.
Wm. Foley, *M. M.*.....Big Springs, Tex.
(3) Int. & G. North. 4-8½ g. 776 m. 73 lo. 1,712 c.
Jos. Harris, *Supt*.....Palestine, Tex.
O. A. Haynes, *S. M. P. & M.*.....Palestine, Tex.
O. H. Johnson, *M. M.*.....Palestine, Tex.
Mobile & Ala. Grand Trunk R. R. 5 g. 59 m. 2 lo. 25 c.
M. L. Duffey, *Supt.*.....Mobile, Ala.
Mobile & Girard R. R. 5 g. 84 m. 7 lo. 112 cars.
W. L. Clark, *Gen. Supt*.....Columbus, Ga.
J. C. Albrecht, *M. M.*.....Columbus, Ga.
A. J. Nix, *M. C. B.*.....Columbus, Ga.
Mobile & Ohio R. R. 5 g. 528 m. 75 lo. 1,553 cars.
G. Jordan, *V. Pr. & Gen. Man*.....Mobile, Ala.
R. H. Pright, *Gen. M. M.*.....Whistler, Ala.
J. T. Booth, *M. C. B.*.....Whistler, Ala.
So'n Div., I. G. Motley, *Supt*.....Mobile, Ala.
John Fitzgerald, *M. M.*.....Macon, Miss.
No'n Div., E. S. Horsford, *Supt*.....Jackson, Tenn.
M. T. Carson, *M. M.*.....Jackson, Tenn.
Mobile & Spring Hill R. R. 5 g. 8 m. 10 lo. 90 cars.
F. Ingate, *Supt*.....Mobile, Ala.
Mont Alto R. R. 4-9 g. 21 m. 2 lo. 3 cars.
G. B. Weistling, *Supt. & P. A.*.....Mont Alto, Pa.
Montpelier & Wells Riv. R. R. 4-8½ g. 38 m. 1 lo. 76c.
Supt......Montpe ier, Vt.
Morgan's Louisiana & Tex. R. R. 4-8½ g. 165 m.
J. W. Morgan, *Pres.*.....New Orleans, La.
C. Trumpy, *Pur. Agt.*.....New Orleans, La.
N. Tilton, *M. M.*.....Algiers, La.
Wm. O'Brien, *M. C. B.*.....Algiers, La.
Muncy Creek Ry. 4-8½ g. 10 m.
Benj. G. Welch, *Rec. & P. Agt.* Hughesville, Pa.
J. V. Chamberlain, *Supt. & M. M.* do.

N.

Nashville, Chattanooga & St. Louis R'y.
5 g. 508 miles 87 lo. 1,979 cars.
J. W. Thomas, *V. Supt. & P. Agt* Nashville, Tenn.
M. J. C. Wrenne, *Supt*.....Nashville, Tenn.
James Cullen, *M. M. & C. B.*.....Nashville, Tenn.
Natchez, Jackson & Col. R. R. 3-6 g. 98 m. 7 lo. 72 c.
E. G. Frost, *Sec. Supt.*.....Natchez. Miss.
Naugatuck R. R. 4-8½ g. 61 miles, 14 lo. 384 cars.
Geo. W. Beach, *Supt*.....Waterbury, Ct.
Henry Hanford, *M. M.*.....Bridgeport, Ct.
Geo. W. Gray, *M. C. B.*.....Bridgeport, Ct.
Nevada Central R. R. (*See Union Pac.*)
Nevada County N. G. R. R. 3 g. 23 m. 3 lo. 46 cars.
John F. Kidder, *Supt*.....Grass Valley, Cal.
Jas. McCormick, *M. M. & C. B.*Grass Valley, Cal.
New Brunswick Ry. 4-8½ g. 194 m. 12 lo. 296 cars.
E. R. Burpee, *Gen. Man*.....Gibson, N. B.
Henry Osborn, *Gen. Sup't*.....Gibson, N. B.
Alfred Seely, *Pur. Agt.*.....Gibson, N. B.
Jesse Mathews, *M. M.*.....Gibson, N. B.
T. N. Burpee, *M. C. B.*.....Gibson, N. B.
New Brunswick & Can. Ry. 4-8½ g. 127 m. 12 lo. 184c
Henry Osborn, *G. M. & P. A.*St. Stephen, N. B.
John Stewart, *Supt*.....St. Stephen, N. B.
Thos. Armstrong, *M. M.*.....St. Andrew's N. B.
G. Houlton, *M. C. B.*.....St. Andrew's, N. B.
New Haven & Derby R. R. 4-8½ g. 13 m. 3 lo. 58 c.
E. S. Quintard, *Supt*.....New Haven, Conn.
M. M. Whitlock, *M. M. & C. B.*.....New Haven, Conn.
New Haven & Northpton. 4-8½ g. 135 m. 26 lo. 572 c.
C. A. Goodnow, *Supt*.....New Haven, Ct.
C. N. Yeamans, *Pur. Agt*.....New Haven, Ct.
Henry Fox, *M. M.*.....New Haven, Ct.
John Sweeny, *M. C. B.*.....New Haven, Ct.
New Jersey & New York Ry. 4-9 g. 43 m. 0 lo. 40 c.
J. D. Hasbrouck, *Gen. Man*.Jersey City, N. J.
J. S. Drake, *Supt. & M. M.*.....Hillsdale, N. J.
L. B. Van Wagoner, *M. C. B.*.....Hillsdale, N. J.
New Jersey Southern Ry. (*See Central, N. J.*)
New London Northern R. R. (*See Central Ver.*)
New York & Canada Pacific Ry. 5 g. 85 m. 10 lo. 200 cars.
H. S. Morse, *Supt*.....New Orleans, La.
E. R. Smith, *M. M. & C. B.*.....New Orleans, La.
N. Y. Central & Hudson River R.R.
4-8½ g. 962 m. 676 lo. 22 539 cars.
J. M. Toucey, *Gen. Supt*.....New York, N. Y.
R. G. Moore, *Pur. Agt*.....New York, N. Y.
Wm. Buchanan, *Supt. M. P.*.....New York, N. Y.
L. Garey, *Supt. Car Dept.*.....New York, N. Y.
N. Y. & Har. Div.: C. M. Bissell, *Supt*.....do.
P. McQ. Gibson, *M. M.*.....New York, N. Y.
C. E. Garey, *M. C. B.*.....Morrisania, N. Y.
Hud. Riv. Div.: C. M. Bissell, *Supt*.N. York, N. Y.
Peter Smith, *M. C. B.*.....New York, N. Y.
E'n Div.: Zenas C. Priest, *Supt*.....Utica, N. Y.
G. B. Van Vorst, *M. M.*.....West Albany, N. Y.
D. Holt, *M. C. B.*.....West Albany, N. Y.
W'n Div.: Geo. H. Burrows, *Supt*.Rochester, N. Y.
S. L. White, *M. M.*.....Syracuse, N. Y.
Amos Gould, *M. M.*.....E. Buffalo, N. Y.
E. A. Olmstead, *M. C. B.*.....E. Buffalo, N. Y.
C. H. Burchard, *M. C. B.*.....E. Rochester, N. Y.
Ed. Donahy, *M. C. B.*.....Niagara Falls, N. Y.
N. Y. Chic. & St. L. Ry. 4-8½ g. 209 m. 115 lo. 4,838 c.
Lewis Williams, *Gen. Man*.....Cleveland, O.
Gen. Supt......Cleveland, O.
Jno. W. Dougherty, *Pur. Agt*.....Cleveland, O.
Jno. Mackenzie, *Supt. M. P.*.....Cleveland, O.
Eas'n Div.: G. H. Kimball, *Supt*.....Cleveland, O.
E. A. Miller, *M. M.*.....Conneaut, O.
West'n Div.: A. H. Evans, *Act. Supt*.Chicago, Ill
Jas. Eckford, *M. M.*.....Bellevue, O.
New York City & Northern. 4-8½ g. 32 m. 2 lo. 91 c
Frank S. Gannon, *Gen. Supt*.High Bridge, N. Y.
Theo. Wheeler, *M. M.*.....High Bridge, N. Y.
New York, Lake Erie & Western R. R.
4-8½ g. 1,020 m. 568 loco. 30,500 cars.
Robt. Harris, *V. Pr. & G. Man*.New York, N. Y.
F. R. Bowen, *Gen. Agt.*.....New York, N. Y.
J. A. Hardenburg, *Pur. Agt*.....New York, N. Y.
F. M. Wilder, *Supt. M. P. & M.*.....Susqueh a, Pa.
E'n Div.: E. O. Hill, *Supt*.....Jersey City, N. J.
J. H. Vreeland, *M. M.*.....Jersey City, N. J.
J. S. Mileham, *M. C. B.*.....Jersey City, N. J.
Del. Div.: W. J. Murphy, *Supt*.Port Jervis, N. Y.
J. Van Vechten, *M. M. & C. B.*Pt. Jervis, N. Y.
Susq. Div.: I. Jolls, *Supt*.....Elmira, N. Y.
Y. Blackburn, *M. M.*.....Susquehanna, Pa.
D. B. Goodell, *M. C. B.*.....Elmira, N. Y.
Buf. & R. Divs.: Chas. Neilson, *Supt.*;and
G. B. Ross, *M. M.*.....Buffalo, N. Y.
W. Wilder, *M. C. B.*.....Buffalo, N. Y.
B. & W. Div.: C. A. Brunn, *Supt*.....do.
W'n Div.: W. B. Coffin, *Supt.*,Hornellsville, N. Y.
R. Gunn, *M. M.*.....Hornellsville, N. Y.
New York, New Haven & Hartford R. R.
4-8½ g. 293 m. 123 lo. 2,708 cars.
E. M. Reed, *V. P. & Gen. Man*.New Haven, Ct.
H. N. Dowd, *Pur. Agt*.....New Haven, Ct.
N. Y. & N. H. Div.: W. H. Stevenson, *Supt*.....N. Y.
Shore Line Div.:
O. M. Shepard, *Supt*.....S. Haven, Ct.
Air Line Div.: O. M. Shepard *Supt.*N. Haven, Ct.
H. Kettendorf, *Supt. M. P.*...New Haven, Ct.
Jas. Deurrer, *M. C. B.*.....New Haven, Ct.
Hart. Div.: C. S. Davidson, *Supt*.....Hartford, Ct.
John Henny, Jr., *Supt. M. P. & M. C. B.*... do.
New York, Ontario & Western Ry.
4-8½ g. 249 m. 79 lo. 1,539 cars.
Gen. Supt......New York, N. Y.
I. W. Fowler, *Pur. Agt*.....Middletown, N. Y.
Edw. Minshull, *M. M. & C. B.*,Middletown, N. Y.
Mid. Div.: N. R. Hankins, *Supt*.Middletown, N. Y.
So'n Div.: C. W. Lanpher, *Supt*.....Norwich, N. Y.
So. Div.: E. Reynolds, *Supt*.....Tappan, N. Y.
New York, Pennsylvania & Ohio R. R.
4-8½ g. 564 m. 218 lo. 7,304 cars.
J. M. Sorrs, *Gen. Man*.....Cleveland, Ohio
J. H. Hoiway, *Pur. Agt*.....Cleveland, Ohio.
Wm. Fuller, *Gen. M. M. & C. B.*..Cleveland, O.
S. Y. Smith, *Asst. Gen. M. C. B.*.....Kent, Ohio.
E'n Div.: A. L. Dunbar, *Supt*.....Meadville, Pa.
J. A. Cooper, *M. M.*.....Meadville, Pa.
D. S. Doctander, *M. C. Rep.*.Meadville, Pa.
J. T. Fosdick, *For. Car Rep.*Salamanca, N. Y.
W'n Div.; J. W. Alsop, *Supt*.....Galion, O.
Wm Hill, *M. M.*.....Galion, O.
J. W. Holmes, *For. Car Rep.*.....Galion, O.
Geo. Wilson, *For. Car Rep.*.....Dayton, Ohio.
Mano'g Div.: F. Wood, *Supt*.....Cleveland, O.
N. Wright, *M. M.*.....Cleveland. O.
C. N. Thorp, *M. C. Rep*.....Cleveland. O.
New York, Providence & Boston R. R.
4-8½ g. 72 m. 20 lo. 430 cars.
J. B. Gardner, *Supt*.....Providence, R. I.
Giles H. Ward, *M. M. Agt*.....Stonington, Conn.
J. H. Anderson, *M. M. & C. B.*Providence, R. I.
N. Y., Susquehanna & W'n. 4-9 g. 135 m. 28 lo. 925 c.
H. M. Britton, *V. M. & P. A.*New York, N. Y.
W. C. Ennis, *M. M. & C. B.*...Wortendyke, N. J.
New York, West Shore & Buffalo Ry.
Chas. Paine, *Gen. Man*.....New York, N. Y.
R. H. Soule, *Supt. M. P.*.....New York, N. Y.
P. S. Semis, *Pur. Agt*.....New York, N. Y.
Harry Linn, *M. M.*.....
Walkill Ry. G. H. Graves, *Supt*. Rondout, N. Y.
New York, Woodhaven & Rockaway R. R.
4-8½ g. 20 m. 8 lo. 101 cars.
J. M. Lunt, *Supt. & P. Agt.*...Hunter's Pt., L. I.
H. W. Turner, *M. M.*.....Hunter's Pt., L. I.
N. Y. & Greenwood Lake Ry. 4-8½ g. 44 m. 8 lo. 53 c.
Stephen Smith, *Supt*.....Jersey City, N. J.
J. A. Hackaday, *Pur. Agt*.....New York, N. Y.
G. A. Hill, *M. M.*.....Pompton, N. J.
N. Y. & Manhattan Beach Ry. 3 g. 23 m. 12 lo. 128 c.
D. C. Durning, *Gen. Dir.*.....New York, N. Y.
O. Fairhurst, *M. M.*.....Greenpoint, L. I.
New York & New England R. R.
4-8½ g. 363 m. 127 lo. 3,326 cars.
S. M. Felton, Jr., *Gen. Man*.....Boston, Mass.
W. W. McKim, *Pur. Agt*.....Boston, Mass.
Ross Wells, *Supt. M. P.*.....Boston, Mas's.
A. K. Mansfield, *Mech. Eng.*.....Boston, Mass.
W. G. Tabor, *M. M.*.....Boston, Mass.
H. E. Barnard, *Gen. Fore.*.....Norwood, Mass.
East Div: C. C. F. Bent, *Supt*.....Bost'n, Mass.
Nor. Div.: P. St. M. Andrews, *Supt*.....Norwich, Ct.
W. F. Stone, *M. M.*.....Norwich, Ct.
Prov. Div.: L. W. Palmer, *Supt*.....Providence, R. I.
Hfd. Div.: E. Holbrook, *Supt*.....Hartford, Ct.
E. M. Hunnstone, *M. M.*.....Hartford, Ct.
D. F. Andregg, *For. C. Dept*.....Hartford, Ct.
Newburg, Dutchess & Conn. R. R. 4-8½ g. 58 miles.
L. L. Kimball, *Gen. Supt*.....Matteawan, N. Y.
W. G. Van Buskirk, *M. M. & C. B.*,
Dutchess Junction, N. Y.
Norfolk Southern. R. R. 4-8½ g. 70 m. 10 lo. 158 c.
M. K. King, *Gen. Man. & Pur. Agt* Norfolk, Va.
J. S. Whitworth, *M. M. & C. B.*.....Norfolk, Va.
Norfolk & Western R. R. 5 g. 428 m. 82 lo. 1,220 c.
Henry Fink, *2d V. Pr. & Gen. Man*.Lynchb'g, Va.
W. C. De Armond, *Pur. Agt*.....Philadelphia, Pa.
C. Blackwell, *Supt*.....Roanoke, Va.
West'n Div.: Frank Huger, *Supt*...Lynchburg, Va.
F. Sterk, *M. M.*.....Lynchburg, Va.
East'n Div.: N. M. Osborne, *Supt*.....Petersburg, Va.
J. T. Robinett, *M. M. & C. B.*...Petersburg, Va.
North-Eastern R. R. of Ga. 5 g. 40 m. 2 lo. 18 cars.
R. B. Bernard, *Supt*.....Athens Ga.
North-Eastern R. R. (S. C.) (*See Wil. & Wel.*
North Pacific Coast R. R. 3 g. 84 m. 12 lo. 320 cars.
David Nile, *Gen'l Sup't*.....San Rafael, Cal.
W. F. Russell, *Pur. Agt*.....San Francisco, Cal.
J. Fowler, *M. M.*.....Sancelito Cal.
North Shore Ry.
A. Davis, *Gen. Man*.....Quebec, Can
Northern (N. H.), and Concord & Claremont Rys.
4-8½ g. 179 m. 25 lo. 509 cars.
Geo. E. Todd, *Supt*.....Concord, N. H.
M. M. & C. B. & Pur. Agt.....do.
Northern (N. J.) R. R. (*See N. Y., L. E. & W'n.*)
Northern Central Ry. (*See Penna. (R. R.)*
North'n Pacific R. R. 4-8½ g. 1,193 m. 104 lo. 3,080 c.
Herman Haupt, *Gen. Man*.....St. Paul, Minn.
John H. Ames, *Pur. Agt*.....St. Paul, Minn.
J. T. Odell, *Supt. Trans*.....St. Paul. Minn.
Geo. W. Cushing, *Supt. M. P. & R.S.*.....do.
W. T. Small, *Asst. S. M. P. & M.*.....do.
St. P. & Minn. Divs.: M. C. Kimberly, *Supt.*...do.
W. T. Small, *S. Mach.* (W. D.) Sprague, W. Ter.
Frank Howard, *M. C. B.*.....Brainerd, Minn.
Dakota Div.: J. M. Graham, *Supt*.....Fargo, Dak.
A. Rupert, *M. M.*.....Fargo, Dak.
Mo. Div.: D. R. Taylor, *Supt*.....Mandan, Dak.
K. F. Doran, *M. M.*.....Mandan, Dak.
Yell'st'e Div.: S. R. Ainslie, *Supt* Glendive, Mont
S. L. Bean, *M. M.*.....Glendive, Mont.
G. S. La Rue, *M. M.*.....Billings, Mont.
(2) Western Div.: J. M. Buckley, *A. G. M.*; and
Otis Sprague, *Supt*.....New Tacoma, W. T.
H. D. Sunborn, *Pur. Agt*.....Portland, Ore.
W. T. Small, *A. S. Mach.* (W. D.)Sprague, W. T.
F. C. Ford, *M. M.*.....New Tacoma, W. T.
W. Sprague, *M. C. B.*.....New Tacoma, W. T.
Pend d'Ore Div.:
F. F. Griffin, *Supt*.....Ainsworth, W. T
J. F. Curtis, *M. M.*.....Sprague, W. T.
Northern & North-W'n Ry. 5-6 & 4-8½ g. 510 lo. 1,033 c.
James Webster, *Supt*.....Toronto, Can.
W. G. Scheerer, *Pur. Agt*.....Toronto, Can.
P. Clarke, *M. M.*.....Toronto, Can.

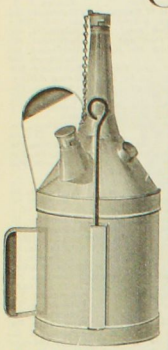
O.

Ogdensburg & Lake Champlain R. R.
4-8½ g. 122 m. 33 lo. 1,160 cars.
A. A. Gaddis, *Gen. Man*.....Ogdensburg, N. Y.
Abr. Klohs, *Supt. & M. M.*.....Malone, N. Y.
Ohio Central R. R. 4-8½ g. 230 m. 45 lo. 4,700 cars.
W. W. Peabody, *Gen. Man*.....Toledo, O.
T. M. Peeler, *Supt*.....Bucyrus, O.
F. W. Stewart, *Pur. Agt*.....Toledo, O
J. H. Morgan, *M. M. & C. B.*.....Bucyrus, O.
Ohio Southern. 4-8½ g. 119 m. 19 lo. 623 cars.
D. R. Ennis, *Supt*.....Springfield, O.
H. C. Sorrick, *M. M.*.....Indianapolis, Ind.
W. B. Warren. *M. M.*.....Springfield, O.
Ohio & Mississippi Ry. 4-9 g. 615 m. 112 lo. 2,501 cars.
W. W. Peabody, *Gen. Man*.....Cincinnati, O.
G. E. Atwood, *Pur. Agt*.....Cincinnati, O.
J. H. Setchel, *Gen. M. M.*.....Cincinnati, O.
Cin. Div.: E. O. Cole, *Supt*.....Seymour, Ind.
John Thumser, *M. M.*.....Seymour, Ind.
J. P. Coulter, *C. B.*.....Aurora, Ind.
Arthur Donaldson, *M. M.*.....Vincennes, Ind.
St. L. & Sp. Div.: C. M. Stanton, *Supt* St. Louis, Mo.
J. Stokes, *M. M.* (Spring. Div.) Pana, Ill.
Louisv. Div.: C. B. Cole, *Supt*.....Louisville, Ky.
Oil City & Chicago R. R. 4-9 g. 36 m. 6 lo. 90 cars.
Van Vleet, *Supt*.....New Castle, Pa.
Oil City & Ridgway R. R. 4-8½ g. 6 m. 1 lo. 43 cars.
A. F. Kent, *Gen. Man*.....Oil City, Pa.
Old Colony & N. Y. R. R. 4-8½ g. 463 m. 110 lo. 2,903 cars.
J. R. Kendrick, *Gen. Man*.....Boston, Mass.
Main Li. Div.: J. H. French, *Supt*.....Boston, Mass.
H. W. Bristol, *Pur. Agt*.....Boston, Mass.
J. K. Taylor, *M. M.*.....Boston, Mass.
M. C. B......Boston, Mass.
Cape Cod Div.: C. H. Nye, *Supt*.Hyannis, Mass.
No. Div.: S. A. Webber, *Supt*.....Fitchburg, Mass
George W. Reynolds, *M. M.*.....Taunton, Mass.
Sam. Stevens, *M. C. B.*.....Taunton, Mass
Olean, Bradford & Warren: Bradford; Kinzua; and
Kendall & Eldred R. Rs. 3 g. 38 m. 9 lo. 222 cars.
J. W. Watson, *Gen. Supt*.....Olean, N. Y.
J. H. Poole, *Pur. Agt*.....Buffalo, N. Y.
Charles Turner, *M. M. & C. B.*.....Olean, N. Y.
Oregon Ry & Nav Co. 4-8½ g. 225 m. 31 lo. 930 cars.
C. H. Prescott, *Manager*.....Portland, Ore.
R. E. O'Brien, *Asst. Man. & Act. Supt*.....do.
K Von Oterendorf, *Supt*. (O.Div.) 8 F'cisco, Cal.
H. S. Rowe, *Supt*. (Ry Div.).....Portland, Ore.
J. M. Drake, *Pur. Agt*.....Portland, Ore.
C. C. Hobart, *Gen. M. M.*.....The Dalles, Ore.
Chas. A. Phipps, *M. C. B.*.....The Dalles, Ore.
N. G. Div.: Wm. Reed, *Man*.....Portland, Ore.
James Walch, *M. M.*.....Portland, Ore.
Oregon & California R. R. 4-8½ g. 200 m. 14 lo. 586 c.
R. Koehler, *Act. Man*.....Portland, Or.
J. Brandt, *Gen. Supt*.....Portland, Or.
A. Brandt, *M. M.*.....Portland, Or.
Owensboro & Nashville R. R. 5 g. 44 m. 3 lo. 70 c.
R. S. Bevier, *Act. Supt*.....Owensboro, Ky.
H. M. Gabel, *M. M. & C. B.*.....Owensboro, Ky.

P.

Pacific Coast Ry. 3 g. 11 m.
J. M. Fillmore, *Manager* San Luis Obispo, Cal.
W. H. Masterman, *M. M. & C. B.*.....do.
Painesville & Youngstown R. R. 3 g. 65 m. 7 lo. 319 c.
R. K. Paige, *Gen. Man*.....Painesville, O.
J. A. Newcome, *Supt*.....Painesville, O.
E. H. Baldwin, *M. M.*.....Painesville O.
Panama R. R. 5 g. 58 m. 14 lo. 594 cars.
H. A. Woods, *Supt*.....Aspinwall, U. S. Col.
E. Z. Penfield, *Pur. Agt*.....New York, N. Y.
W. F. Rae, *M. M.*.....Aspinwall, U. S. Col.
Parker & Karns City; and
Karns City & Butler R. Rs. 3 g. 27 m. 5 lo. 84 cars.
W. H. Phillips, *Supt*.....Parker City, Pa.
Philip Davies, *M. M.*.....Parker City, Pa.
Wm. Wolford, *M. C. B.*.....Parker City, Pa.
Passumpsic R. R. 4-8½ g. 145 m. 28 lo. 980 cars.
E. Raymond, *Pres. & Pur. Agt*.Boston, Mass.
H. E. Folsom, *Supt*.....Lyndonville, Vt.
L. L. Fairbanks, *M. M.*.....Lyndonville, Vt.
L. F. Woodard, *M. C. B.*.....Lyndonville, Vt.
Peach Bottom R. R. 3 g. 55 m. 6 lo. 52 cars.
Samuel Dickey, *Gen. Man*.....York, Pa.
G. R. Dickey, *Supt. & Pur. Agt*.....York, Pa.
E. H. Williams, *M. C. B.*.....York, Pa.
E. Dix'n S. Dickey, *Supt*.....Oxford, Pa.
W. P. Kirk, *M. M.*.....Oxford, Pa.
Pennsylvania Co.'s (60 Roads.
4-9 g. 2,858 m. 817 lo. 29,432 cars.
Wm. Mullins, *Gen. Pur. Agt*.....Pittsburg, Pa.
Joseph Wood, *Supt. M. P.*.....Fort Wayne, Ind.
(1) Clev. & Pittsb'g R. R. 4-9 g. 224 m. 97 lo. 3,530 c.
F. Smith, *Asst. Man*.....Cleveland, O.
Philip Bruner, *Supt*.....Wellsville, O.
W. F. Beardsley, *Mast. of Mach.* Wellsville, O.
(2 & 3) Erie & Ashtabula Rds. 178 m. 29 lo. 1,340 c.
John M. Kimball, *Supt*.....Youngstown, O.
J. A. Wood, *Gen. For. Shops*.....Erie, Pa.
(4) Indianap. & Vincennes Rd. 117 m. 11 lo. 303 cars.
Jas. F. Turner, *Supt*.....Indianapolis, Ind.
(5) Jeffersonville, Madison & Indianapolis R. R.
4-9 g. 217 m. 47 lo. 784 cars.
E. W. McKeon, *Supt*.....Louisville, Ky.
Wm. Swanston, *M. M.*.....Jeffersonville, Ind.
Iw. Austin, *M. C. B.*.....Jeffersonville, Ind.
(6) Northwestern Ohio Ry. 4-9 g. 70 m.
J. S. Morris, *Supt*.....Toledo, O.
(7) Pittsburg, Ft. Wayne & Chicago Ry.
4-9 g. 468 m. 278 lo. 6,782 cars.
E'n Div.: John Thomas, *Supt*.....Allegheny, Pa.
Geo. J. Parkin, *M. M.*.....Allegheny, Pa.
D. M. Pepper, *M. M.*.....Pittsburg, Pa.
W'n Div.: John Thomas, *Supt*...Ft. Wayne, Ind.
F. D. Casanave, *M. M.*.....Ft. Wayne, Ind.
A. H. Somers, *Gen. Pur. Shops*.....Chicago, Ill.
(8) Pittsburg, Cincinnati & St. Louis Ry.
4-9 g. 1,172 m. 336 lo. 6,482 cars.
Jas. McCrea, *Gen. Supt*.....Allegheny, Pa.
Supt M. P. & M....Columbus, O.
P. & Col. Div.: E. B. Taylor, *Supt*.....Dennison, O.
C. B. Peirce, *M. M.*.....Columbus, O.
Robt. Curtis, *M. M.*.....Columbus, O.
Thos. Chamberlain, *M. C. B.*.....Columbus, O.
C. & M. Div.: W. C. Dale, *Supt*.....Cincinnati, O.
Leroy Kells, *M. M.*.....Lancaster, O.
Daniel Jewell, *M. C. B.*.....Lancaster, O.
Li. Mi. Div.: Philip Peters, *Supt*.....Cincinnati, O.
Leroy Kells, *M. M.*.....Cincinnati, O.
Jos. Underwood, *Gen. For. in charge*.Cincinnati, O.
Ind. Div.: J. S. Miller, *Supt*.....Richmond, Ind.
W. W. Reynolds, *M. M.*.....Logansport, Ind.
Chas. H. Starr, *M. C. B.*.....Logansport, Ind.
W. Agin, *Gen. For.*.....Indianapolis, Ind.
Chi. Div.: Chas. Watts, *Supt*.Logansport. Ind.
(9) Terre Haute & Indianapolis R.
4-9 g. 374 m. 83 lo. 2,858 cars.
Joseph Hill, *Gen. Supt*.....St. Louis, Mo.
C. R. Peddle, *P. Agt*.....St. Louis, Mo.
Geo. H. Prescott, *S. M. P. & M Terre Haute, Ind.*
E. D. Carter, *M. C. B.*.....Terre Haute, Ind
Clinton Idler, *M. M.*.....Indianapolis, Ind.
Chas. Butler, *M. M.*.....Effingham, Ill.
A. W. Quakenbush, *M. M.*.Logansport, Ind.
Pennsylvania R. R. Co.'s Roads. (7 Gen. Divs.)
4-9 g. 2,704 m. 1,271 loco. 51,884 cars.
Chas. E. Puch, *Gen Man*.....Philadelphia, Pa.
Enoch Lewis, *Pur. Agt*.....Philadelphia, Pa.
John Reilly, *Supt. Trans*.....Philadelphia, Pa.
T. N. Ely, *Gen. S. M. P.* (4 Gen. Divs.)Altoona, Pa.
(1) Pennsylvania R. R. Divs.
4-8½ g. 1,105 m. 627 lo. 35,383 cars.
S. M. Prevost, *Gen. Supt*.....Altoona, Pa.
Frank L. Sheppard, *Asst. M. P.*.Altoona, Pa.
G. W. Stratton, *M. M.*.....Altoona, Pa.
Jno. P. Levan, *Gen. Fore.*.....Altoona, Pa.
Phila. Div.: W. H. Latta, *Supt*.Philadelphia, Pa.
H. D. Garrett, *M. M.*.....W. Philadelphia, Pa.
I. W. Van Houten, *Gen. For.*.....W. Phila., Pa.
Mid. Div.: H. H. Carter, *Supt*.....Harrisburg, Pa.
E. L. Caum, *M. M.*.....Harrisburg, Pa.
Samuel W. Myers, *Gen. For* Harrisburg, Pa.
Alt'a Div.: Robert Pitcairn, *Supt*.....Pittsburg, Pa.
Pitts. Div.: Robert Pitcairn, *Supt*.....Pittsburg, Pa.
D. O. Shaver, *M. M.*.....Pittsburg, Pa.
J. G. Brown, *Gen. For.*.....Pittsburg, Pa.
W. Pa. Div.: A. P. Kirtland, *Supt*.Blairsville, Pa.
Wm. B. Norris, *M. M.*.....Blairsville, Pa.
M. H. Ralls, *Gen. For.*.....Blairsville Pa.
Fred. Div.: J. B. Hutchinson, *Supt*.....York, Pa.
Tyrone Div.: S. S. Blair, *Supt*.....Tyrone, Pa.
Lew. Div.: Wm. M. Phillips, *Supt* Lewistown, Pa.
Bed. Div.: Thos. A. Roberts, *Supt*.....Bedford, Pa.
Monong. Div.: David M. Watt, *Supt* Pittsburg, Pa.
W. H. Dowell, *M. M.*.....Latrobe, Pa.
(2) United R. Rs. of N. J. Divs. 414 m. 257 lo. 4,698 c.
F. Wolcott Jackson, *Gen. Sit.* Jersey City, N. J.
N.Y. Div.: Robt. S. Pettit, *Supt* Jersey City, N. J.
H. S. Hayward, *St. M. P.*.....Jersey City, N. J.
David H. Baker, *Gen. For* Jersey City, N. J.
L. A. Rockwell, *M. M.*.....Jersey City, N. J.
E. F. Bosdevex, *Gen. For.*.....Jersey City, N. J.
Belv. Div.: J. A. Anderson, *Supt*.Lambertville, N. J.
H. McDowell, *M. M.*.....Lambertville, N. J.
Amboy Div.: I. S. Buckalew, *Supt* Camden, N. J.
Thos. Kerr, *M. M.*.....So. Amboy, N. J.
P. S. Reeves, *Gen. For.*.....So. Amboy, N. J.
(3) West Jersey R. R. 4-9 g. 163 m. 22 lo. 342 cars.
Joseph Crawford, *Supt*.....Camden, N. J.
W. McAllister, *M. M.*.....Camden, N. J.
C. C. Williams, *Gen. For.*.....Camden, N. J.
(4) Phila. & W'n Balt. R.R. 2-9 m. 86 lo. 1,288 c.
H. F. Kenney, *Gen. Supt*.....Philadelphia, Pa.
S. A. Hodgman, *M. M.*.....Wilmington, Del.
W. H. Langton, *Gen. For.*.....Wilmington, Del.
Cen. Div.: L. K. Lodge, *Supt*.....Philadelphia, Pa.
S. D. Danfield, *M. M. & C. B.*.....Chester, Pa.
Del. Div.: T. Mills, *Supt*.....Wilmington, Del.
J. A. Baynard, *M. M.*.....Oxford, Md.
C. E. Mason, *M. C. B.*.....Oxford, Md.
(5) Phila. & Read. R. R. 370 m. 117 lo. 4,481 c.
R. Neilson, *Gen. Supt*.....Williamsport, Pa.
A. O. Dayton, *Supt. Mo. Po.*.Williamsport, Pa.
E'n. Div.: Thos. Gucker, *Supt*.Williamsport, Pa.
Sun. H. & W. Div.: A. Walters, *Supt.*; and
H. K. Stout, *M. M.*.....Sunbury, Pa.
Mid. Div.: E. B. Westfall, *Supt*.....Renova, Pa.
Wm. L. Holman, *M. M.*.....Renova, Pa.
West'n Div.: J. W. Reynolds, *Supt*.....Erie, Pa.
W. T. Smith, *M. M.*.....Erie, Pa.
(6) Northern Central Ry. 4-9 g. 320 m. 152 lo. 6,163 c
Robert Neilson, *Gen. Supt.*; Williamsport, Pa.
A. O. Dayton, *Supt. M. P.*...Williamsport, Pa.
A. W. Sumner, *Pur. Agt*.....Baltimore, Md.
Susq. Div.: A. Walters, *supt*.....Williamsport, Pa.
Sham. Div.: *Supt*.....Sunbury, Pa.
Elm. & Can. Divs.: S. Meade, *Supt*. Elmira, N. Y.
Jas. Strode, *M. M.*.....Elmira, N. Y.
J. C. Dyott, *Gen. For.*.....Elmira, N. Y.
Baltimore Div.: H. W. Knapp, *Supt*.Baltimore, Md
(7) Balt. & Pot. & Alex. & Fred. 128 m. 29 lo. 356 c
G. C. Wilkins, *Gen. Supt*.....Baltimore, Md
A. W. Sumner, *Pur. Agt*.....Baltimore, Md.
J. M. Wallis, *Supt. Mo. Po.*.....Baltimore, Md
J. M. Coale, *M. M.*.....Baltimore, Md
G. W. Denarest, *Gen. For.*.....Baltimore, Md
Penn. Coal Co.'s R. R. 4-3 g. 67 m. 23 eng. 2,871 c
J. B. Smith, *Gen. Supt*.....Dunmore, Pa.
And. Crane, *M. M.*.....Dunmore, Pa.
Geo. W. Simpson, *M. C. R.*.....Dunmore, Pa.
Pennsylvania & Erie R. R.—Early Branch
C. R. Early, *Gen. Supt*.....Ridgeway, Pa.
Pensacola & Perdido R. R. 6 g. 8 m. 5 lo. 73 cars.
B. F. Simmons, *Pr. & Supt*.....Pensacola, Fla.
H. W. Simmons, *Sec. & Pur. Agt*.Pensacola, Fla.
R. G. Nicholl, *M. M. & C. B.*.....Pensacola, Fla.
Peoria, Decatur & Evansville Ry.
4-8½ g. 94 m. 30 lo. 1,458 cars.
G. L. Bradbury, *Gen. Man*.....Peoria, Ill
P. Reilly, *M. M.

NOYES'
Patent Liquid and Condensed COOLER.



For Cooling Railroad Car and Steamboat Journals and Bearings of all Kinds, and for Mixing with Other Oils.

The attention of those who are running heavy journals is respectfully invited to the above Liquid Cooler. It has been successfully used for upward of ten years, and is constantly growing in favor, as its merits become known, and we are confident that practical men cannot fail of being convinced that our preparation deserves their candid attention. What we claim for it is:

That it will Cool a Hot Journal When in Motion,

and extinguish the flame when the box is on fire; that its use will, in a great measure, prevent the occurrence of a hot journal, and save the expense, delays and annoyances incident thereto; that it will eliminate the heat from a journal at a temperature greatly below the point required to melt the babbitt, preventing the accumulation of heat, and by a timely application save it from destruction; that its non-inflammable elements (where waste is used) permeate the waste and prevent its taking fire; that it keeps the journal smooth and polished, preventing unnecessary friction; that its combination is based upon true scientific principles, which renders it impossible to fail in its results, and is the

Only Preparation that will Cool a Hot Journal

while it is in motion, as attested by certificates below; that one thorough application on a hot journal will do more execution in cooling than the constant application of water for half an hour, besides doing it evenly and without loss of time.

Every Railroad Train or Steamboat

should have a can of the Liquid Packing on board, with the directions for its use pasted upon it, and thus have always at hand the means of effectually cooling a hot journal, and thereby avoid the expense, danger and trouble from this cause.

WHAT RAILROAD MEN SAY OF IT.

SALEM, Aug. 7, 1872.

MR. P. NOYES.—*Dear Sir:* I have been using your Liquid Packing for cooling car journals for some time past, and have been well pleased with it. I have had occasion to use it a number of times, under Pullman cars, and it has been a complete remedy in every case of hot journals.

Every train should be provided with it, as it is a saving of time and expense in the running of trains, provided it is applied and cared for according to directions for using.

Yours truly,
J. P. SOMERBY,
M. C. B. Eastern Railroad.

SALEM, Aug. 28, 1880.

I can recommend Noyes' Liquid Cooler as an excellent article to carry on trains for use in case of Hot Journals, which it cools, without injury to the journals, more effectually than anything I know of.

J. B. BILLINGS,
M. C. B. Eastern Railroad.

Our Liquid Cooler is now in use, and has been from one to eight years, upon the following roads, and we have numerous recommendations from them: Boston & Maine R. R., Boston & Lowell R. R., Intercolonial R. R., Boston, Concord & Montreal R. R., Fitchburg R. R., Eastern R. R., New York, New Haven & Hartford R. R., New York & New England R. R., Connecticut River R. R., Delaware & Hudson Canal Co., Old Colony.

In ordering state whether it is desired for general Lubricating or Cooling. The Condensed is sold, especially for Lubricating, by the Pound, and the Liquid by the Gallon, as low as any article of the quality in the market.

SEND FOR A BARREL. NO CHARGE UNLESS IT DOES ALL WE STATE.

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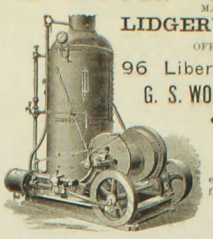

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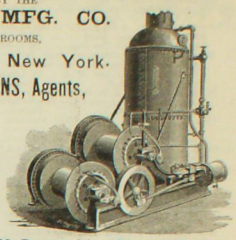

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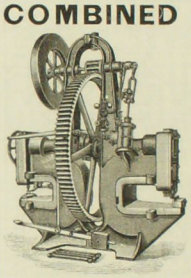

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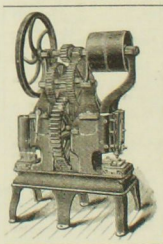

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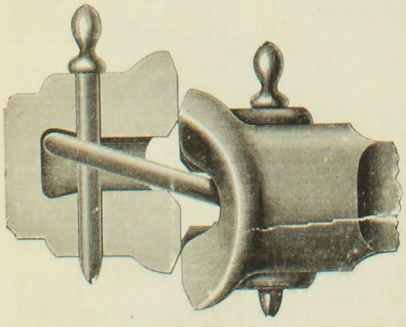

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T. W. Gentry, *M. M*.....Richmond, Va.
J. B. Vaughan, *For. Car Sh*.. Richmond, Va.
North Carolina Div. 5 g. 223 m. 22 lo. 268 cars.
A. B. Andrews, *Supt*.....Raleigh, N. C.
W. H. Turrentine, *M. M.* Comp'y's Shops, N. C.
J. C. Holt, *For. Car Sh.* Comp'y's Shop, N. C.
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Narrow-Gauge Branches. 3 g. 80 m. 5 lo. 37 c.
I. Y. Sage, *Supt*.....Atlanta, Ga.
Wm. A. Walden, *M. M*.....Atlanta, Ga.
Z. T. Smith, *For. Car Sh*.....Atlanta, Ga.
(2) Charlotte, Col.& Aug. R. R. 5g. 230 m. 22 lo. 387 c.
G. R. Talcott, *Supt*.....Columbia, S. C.
J. H. Green, *M. M.* (2 roads)...Columbia, S. C.
J. H. Peckins, *For. Car Sh*.....Columbia, S. C.
(3) Columbia & Greenville R. R. 5 g. 267 m. 22 l. 318 c.
J. W. Fry, *Supt*.....Columbia, S. C.
J. O. Meredith, *For. Car C. Rep*.....do.
(4) Virginia Midland Ry. 4-8½ g. 353 m. 41 lo. 631 c.
W. M. S. Dunn, *Eng. & Supt*.Alexandria, Va.
J. E. Waddey, *M. of M*.....Alexandria, Va.
J. T. Nalls. *M. C. B*.....Alexandria, Va.
Richmond & Petersburg R.R. 4-8½ g. 25 m. 8 lo. 130 c
J. R. Kenly, *Supt*.....Richmond, Va.
John O'Brien, *M. M*.....Richmond, Va.
Rio Grande R. R. 3-6 g. 22 m. 3 lo. 39 cars.
M. J. Gonzlia, *Rec. & Gen. Man*. Brownsville, Tex.
G. W. Rendall, *M. M*.....Brownsville, Tex.
M. Markwood, *M. C. B*.....Brownsville, Tex.
Rochester & Pittsb'g R.R. 4-8½ g. 134 m. 13 lo. 612 c
Geo. E. Merchant, *Gen. Man*..Rochester N. Y.
J. P. Hovey, *M. M*.....Rochester. N. Y.
Rock Island & Mercer County R. R., and
Rock I'd & Peoria Ry. 4-8½ g. 113 m. 12 lo. 357 c.
R. R. Cable, *V.-P. & Gen. Supt*..Rock Island, Ill.
R. I. & P. Ry.: H. B. Sudlow, *Supt. of P. & A*.....do.
Joseph Elder, *M. M*.....Peoria, Ill.
R. I. & M. C. Rd.: B. T. Cable, *Supt.* R'k Island, Ill.
J. H. Parks, *M. M*.....Rock Island, Ill.
Rome (Ga.) R. R. 5 g. 20 m. 2 lo. 13 cars.
Eben Hillyer. *Supt*.....Rome, Ga.
O. W. Harbin, *M. M. & C. B*.....Rome, Ga.
Rome, Watertown & Ogdensburg R. R.
4-8½ g. 409 m. 51 lo. 1,400 cars.
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Geo. W. B. Cushing, *Pur. Agt*, New York, N. Y.
Geo. H. Haselton, *M. M. & C. B*..Oswego, N. Y.
Rumford Falls & Buckfield R.R. 4-8½ g. 23 m. 2 l. 42 c.
L. L. Lincoln, *Supt*.....Canton, Me.
O. Spaulding, *Pur. Agt*.....Buckfield, Me.
E. R. Oldham, *M. M*.....Buckfield, Me.

S

Sabine & East Texas Ry. 4-8½ g. 104 m. 5 lo. 333 c.
R. H. Cousins, *Gen. Supt*.....Beaumont, Tex.
W. A. Meagher, *M. M*.....Beaumont, Tex.
Sacramento & Placerville R. R. 4-8½ g. 40 m. 3 lo. 68 c.
J. B. Wright, *Supt. & P. A*.....Sacramento, Cal.
A. J. Stevens *M. M*.....Sacramento, Cal.
Benj. Welch, *M. C. B*.....Sacramento, Cal.
Saginaw & Northe'n R. R. 4-8½ g. 30 miles.
J. Jackson, *Gen. Man*.....Pinconning, Mich.
F. T. Lillote, *Act. Pur. Agt*...Pinconning, Mich.
Edward Keeler, *M. M*.....Pinconning, Mich.
Saginaw Valley & St. Louis R. R. 4-8½g. 35 m. 41. 64 c
N. W. Merrill, *Supt*.....Saginaw, Mich.
Allan Bourn, *Pur. Agt*.....Detan Bourn, Mich.
Geo. C. Watrous, *M. M*.....Iona, Mich.
San Francisco & No. Pac. 4-8½ g. 112 m. 11 lo. 244 c.
Arthur Hughes, *Gen. Man*..San Francisco, Cal.
H. C. Whiting, *Supt*.....Petaluma, Cal.
Ed. Reynolds, *Gen. M. M*.....Donahue, Cal.
Savannah, Florida & W'n Ry. 5 g. 425 m. 50 lo. 1,000 c.
H. S. Haines, *Gen. Man*.....Savannah, Ga.
R. G. Fleming, *Supt*.....Savannah, Ga.
F.S. Pendergast, *Eng. & Asst. Supt*.Savannah, Ga.
A. A. Aveilhé, *Pur. Agt*.....Savannah, Ga.
G. M. D. Riley, *M. of Mach*.....Savannah, Ga.
Joe W. Stewart, *For. Car Dept*.Savannah, Ga.
Sav., Griffin & No. Ala. R. R. *Op. by Central (Ga.).*
Schuylkill & Lehigh R. R. 4-8½ g. 43 miles.
Eldridge Dale, *Supt*.....Eldridge, Pa.
Scoharie Valley R. R. (*See Middleburg & Sch.*)
Scioto Valley R. R. 4-8½ g. 131 m. 15 lo. 460 cars.
Geo. Skinner, *Supt*.....Columbus, O.
R. Bromley, *M. M. & P. A*.....Portsmouth, O.
Seaboard & Roanoke R. R. 4-8½ g. 80 m. 21 lo. 381 c.
E. G. Ohlo, *Mast. of Trans*...Portsmouth, Va.
M. M. Pendleton, *S. M. P. & M*.Portsmouth, Va.
Shenandoah Valley R. R. 4-8½ g. 143 m. 15 lo. 104 c.
Henry Fink, *Gen. Man*.....Lynchburg, Va.
J. H. Sands, *Supt*.....Roanoke, Va.
W. C. De Armond, *Pur. Agt*. Philadelphia, Pa.
Chas. Blackwell, *Supt. of M. P.* Roanoke, Va.
W. Welch, *M. M*.....Roanoke, Va.
Shenango & Allegheny R.R 4-8½ g. 47 m. 6 lo. 156 c.
J. T. Blair, *G. Supt. & Pur. Agt*. Greenville, Pa.
Edw. Richardson, *M. M. & C. B*.Greenville, Pa.
Shepaug R. R. 4-8½ g. 38 m. 3 lo. 27 cars.
Edwin McNeill, *Supt*.....Litchfield, Ct.
C. M. Allen, *M. M*.....Litchfield, Ct.
Ship Is., Ripley & Ky. R. R. 3 g. 25 m. 2 lo. 25 cars.
G. L. Harris, *Supt. & Pur. Agt*.. Ripley, Miss.
W. H. Phelps, *M. M*.....Ripley, Miss.
Sioux City & Pacific R. R. 4-8½ g. 427 m. 21 lo. 504 c.
P. E. Hall, *Gen. Man. & P. A*.Cedar Rapids, Ia.
C. M. Lawler, *Gen. Supt*.....Missouri Valley, Ia.
J. S. Wattles, *Supt*.....Missouri Valley, Ia.
C. F. McCoy, *Asst. Supt*.....Blair, Neb.
S. A. Teal, *M. M*.....Missouri Valley, Ia.
W. H. Ramseyer, *M. C. B*.....Missouri Valley, Ia.
Sodus Bay & Southern Ry. 4-8½ g. 94 m. 4 lo. 40 c.
S. B. Stuart, *Supt. & Pur. Agt*.Sodus Point, N. Y.
C. H. Hill, *M. C. B*.....Sodus Point, N. Y.
South Carolina R. R. 5 g. 943 m. 42 lo. 685 cars.
John B. Peck, *Gen. Man*.....Charleston, S. C.
S. B. Pickens, *Pur. Agt*.....Charleston, S. C.
C. J. Cochrane, *Mast. of Mach*.Charleston, S. C.
Geo. H. Gramling, *M. C. B*....Charleston, S. C.
South-Eastern Ry. 4-8½ g. 200 m. 20 lo. 826 cars.
Bradley Barlow, *Gen. Man*.....Montreal, Can.
T. A. McKinnon, *Asst. Man*.....Montreal, Can.
H. A. Allen, *Supt*.....W. Farnham, P. Q.
A. G. Eastman, *M. M*.....W. Farnham, P. Q.
South Florida R. R. 3 gauge 40 m. 4 lo. 20 cars.
B. B. Seroope, *Supt. & P. A*.....Sanford, Fla.
C. C. Haskell, *Pur. Agt*.....Sanford, Fla.
J. A. Campbell, *M. M*.....Sanford, Fla.
A. D. Stenfford, *M. C. B*.....Sanford, Fla.
South Mountain R. R. 4-8½ g. 18 m. 4 lo. 22 c.
W. H. Woodward, *Supt*. Pine G've Furnace, Pa.
South Pacific Coast R. R. 3 g. 81 m. 10 lo. 300 cars.
A. H. Fracker, *Gen. Supt*..San Francisco, Cal.
G. H. Waggoner *Pur. Agt*. San Francisco, Cal.
H. L. Reese, *M. M. & C. B*.....Newark, N. J.
South-Western R. R. (Ga.) (*See Central of Ga.*)
South-Western Ry. (Ky.) 4-8½ g. 4 m. 1 lo. 38 cars.
J. M. Wilson, *Supt*.....Harrodsburg, Ky.
J. Tomlinson, *Pur. Agt*.....Harrodsburg, Ky.
Southern Central R. R. 4-8½ g. 115 m. 16 lo. 447 c.
James G. Knapp, *Supt. & Pur. Agt*. Auburn, N. Y.
Chas. G. Brown, *M. M*.....Auburn, N. Y.
H. Mooney, *M. C. B*.....Auburn, N. Y.
Southern Maryland R. R. 4-8½ g. 20 m. 1 lo. 5 c.
Robert Knight, *Supt*.....Brandywine, Md.
C. R. Joyce, *M. M*.....Brandywine, Md.
Southern Pacific R. R. 4-8½ g. 198 m. Branches 228 c.
Northern Div. (*For other Divs. see Cen. Pac.*)
A. C. Bassett, *Supt*.....San Francisco, Cal.
J. R. Watson, *Pur. Agt*.....Sacramento, Cal.
J. T. Wilson, *M. M*.....San Francisco, Cal.
F. N. Bellisle, *M. C. B*.....San Francisco, Cal.
Spring Hill & Parsboro Ry. 4-8½ g. 32 m. 1 lo. 64 c.
J. A. Killam, *Gen. Man*.....Parrsboro, N. S.
K. McKinnon, *M. M*.....Parrsboro, N. S.
St. Croix & Penobscot R. R. 4-8½ g. 22 m. 4 lo. 106 c.
S. W. Haycock, *Supt. & Pur. Agt*.. Calais, Me.
G. H. Corsen, *M. M*.....Milltown, Me.
H. C. Hinckley, *M. M. & C. B*.St. Johnsbury, Vt.
St. Joseph & Des Moines R. R. (*See K. C., St. J. & C. B.*)
St. Lawrence & Ottawa Ry. 4-8½ g. 50 m. 10 l. 146 c.
Archer Baker, *Gen. Supt*.....Montreal, Can.
R. Blackwell, *Mech. Supt*.....Montreal, Can.
St. Louis, Alton & Terre Haute R. R.
Main Line. (*See Ind. & St. L. Div.: Ohio Ry.*)
St. Louis & Cairo Div.: 4-8½ g. 137 m. 17 lo. 778 c.
G. W. Parker, *Gen. Man*.....St. Louis, Mo.
J. L. Hinckley, *Supt*.....Belleville, Ill.
A. M. De Clerq, *M. M*.....St. Louis, Mo.
St. Louis Bridge Co. and Tunnel R. R.
4-8½ g. 27 m. 18 lo. 11 cars.
Wm. Taussig, *Gen. Man*.....St. Louis, Mo.
A. W. Dickinson, *Supt*.....St. Louis, Mo.
J. E. Willias, *Jr., Pur. Agt*.....St. Louis, Mo.
H. M. Smith, *M. M*.....St. Louis, Mo.
St. Louis, Rock I. & C. 4-8½ g. 28 m. 1 lo. 78 cars.
Jas. Prentice, *Supt*.....Carbondale, Ill.
Jas. C. Bryden, *Pur. Agt*.....St. Louis, Mo.
St. Louis, Ft. Scott & Wichita R.R. 4-8½ g. 108 miles.
F. Tiernan, *V. P. & Gen. Man*..Fort Scott, Kan.
J. W. Miller, *Gen. Supt*.....Fort Scott, Kan.
Henry Berger, *M. M*.....Ft. Scott, Kan.
A. T. Tiddell, *M. C. B*.....Ft. Scott, Kan.
St. L., Hannibal & Keokuk. 4-8½ g. 85 m. 5 lo. 65 c.
W. W. Walker, *Gen. Supt*.....Hannibal, Mo.
Geo. Douglass, *Pur. Agt*.....Hannibal, Mo.
St. Louis, Iron Mt. & So'n Ry. (*See Mo. Pacific Ry.*)
St. L. & Kcokuk R. R. W'n 4-8½ g. 187 m. lo. 312 c.
R. Law, *Gen. Supt*.....Keokuk, Ia.
G. B. Harris, *Pur. Agt*.....Chicago, Ill.
Wm. H. Barnett, *M. M*.....Keokuk, Ia.
St. L., Salem & Little Rock. 4-9 g. 69 m. 5 lo. 103 c
H. A. Crawford, *V. Pr. & P. A*....St. Louis, Mo.
E. H. Sankey, *Supt*.....Salem, Mo.
Thomas Everson, *M. M*.....Steelville, Mo.
J. W. Houston, *M. C. B*.....Steelville, Mo.
St. L., Vandalia & T. H. (*See T. H. & I. Div. of Penn. Co.*)
St. Louis & Cairo R. R. 3 g. 152 m. 22 lo. 896 cars.
Chas. Hamilton, *Gen. Supt*.....St. Louis, Mo.
R. M. Pringle, *M. M*.....St. Louis, Mo.
St. L. & San Fran. Ry. 4-8½ g. 854 m. 80 lo. 2,700 c.
C. W. Rogers, *V. P. & Gen. Man*. St. Louis, Mo.
D. H. Nichols, *Mast. Trans*..No. Springfield, Mo.
A. G. Thompson, *Pur. Agt*.....St. Louis, Mo.
M. M. Kearney, *M. M. & C. B*..No. Springfield, Mo.
Mo. & Ark. Div.: W. A. Thomas, *Supt*.....Pierce City, Mo.
Kan. Div.: J. R. Wentworth, *Supt*. Neodesha, Kan.
St. Martin's & Upham Ry. 4-8½ g. 30 m. 2 lo. 8 cars.
A. Mascrel, *Gen. Man*.....Martin s. N. B.
St. Paul, Minneapolis & Manitoba Ry.
4-8½ g. 1,125 m. 168 lo. 4,331 cars.
A. Mackenzie, *Gen. Man*.....St. Paul, Minn.
E. B. Wakeman, *Asst. Gen. Supt*.St. Paul, Minn.
J. C. Morrison, *Pur. Agt*.....St. Paul, Minn.
H. Middleton, *M. M. & C. B*.....St. Paul, Minn.
Breck. Div.: A. Guthrie, *Supt*.....St. Paul, Minn.
F. F. Div.: J. B. Rice, *Supt*.....St. Paul, Minn.
So'n Min. Div.: Smith, *Supt*.....Glyndon, Minn.
St. Paul & Duluth R. R. 4-8½ g. 196 m. 24 lo. 580 c.
H. P. Breed, *Asst. Gen. Supt*.....St. Paul, Minn.
J. G. Callaghan, *Pur. Agt*.....St. Paul, Minn.
W. McFarland, *M. M*.....St. Paul, Minn.
John Hill, *M. C. B*.....St. Paul, Minn.
Sterling Mountain Valley Ry. 6 g. 8 m. 2 lo. 145 cars.
J. C. Missimer, *Supt*.....Sloatsburg, N. Y.
Syracuse, Binghamton & N. Y. R. R. (*See D. L. & W.*)
Syracuse, Geneva & Corning. 4-8½ g. 44 m. 4 lo. 60 c.
Albert Allen, *Supt*.....Syracuse, N. Y.
George W. West, *M. M*.....Syracuse, N. Y.
W. J. McMichael, *M. C. B*.....Syracuse, N. Y.
Syracuse, Geneva & Corning; Corning, Cowanasque & Antrim R. Rs. 4-8½ g. 121 m. 28 lo. 1,044 c.
A. H. Gorton, *Supt*.....Corning, N. Y.
W. E. Gorton, *Asst. Supt*.....Corning, N. Y.
Andrew Beers, *Pur. Agt*.....Corning, N. Y.
O. C. Patchell, *M. M*.....Corning, N. Y.
C. J. Butler, *M. C. B*.....Corning, N. Y.

T

Terre Haute & So. Eastern Ry. 4-9 g. 40 miles.
Geo. Atherton, *Supt*.....Terre Haute, Ind.
Texas-Mexican; and Mexican National Rys.
3 g. 333 m. 28 lo. 600 cars.
G. C. Gardner, *Gen. Man*.....New York, N. Y.
W. E. Lewis, *Supt*.....Mexico, Mex.
J. Dougherty, *Pur. Agt*.....New York, N. Y.
No. Div.: F. A. Lister *M. M*..Corpus Christi, Tex.
P. J. Milan, *M. M. & C. B*.....do.
Mex. Nat. Ry.: J. C. Monroe, *M. M*..Mexico, Mex.
Jno. Scullen, *Gen. Man*.....Mexico, Mex.
Texas Western Ry. 3 g. 42 m. 2 lo. 34 cars.
E. L. Heriot, *Gen. Man*.....Houston, Tex.
J. W. Goodlett, *Supt*.....Houston, Tex.
T. F. Gilspin, *M. M*.....Houston, Tex.
Texas & New Orleans; Louisiana W'n R. Rs.
4-8½ g. 291 m. 25 lo. 900 c.
A. N. Towne, *Gen. Man*.....Houston, Tex.
P. B. Watson, *Pur. Agt*.....Houston, Tex.
C. A. Hungerford, *Supt*.....Houston, Tex.
D. C. Smith, *M. M*.....Houston, Tex.
J. M. Mather, *M. C. B*.....Houston, Tex.
Texas & Pacific. (*See Mo. Pac. Ry.*)
Texas & St. Louis Ry. 3 g. 304 m. 19 lo. 338 cars.
G. W. Ristine, *Gen. Man*.....St. Louis, Mo.
J. B. Van Dyne, *Supt*.....Tyler, Tex.
F. W. Paramore, *Pur. Agt*.....St. Louis, Mo.
L. B. Fish, *Pur. Agt*.....Tyler, Texas.
C. A. Prescott, *M. M. & P. & M*...St. Louis, Mo.
Tioga and Elmira State Line R. Rs.
4-8½ and 6 g. 54 m. 17 lo. 953 cars.
L. H. Shattuck, *Supt*.....Blossburg, Pa.
J. A. Hardenburg, *Pur. Agt*.. New York, N. Y.
Pere Bonny, *M. M*.....Blossburg, Pa.
D. H. Stratton, *M. C. B*.....Blossburg, Pa.
Toledo, Ann Ar. & Gr. Tr. Ry. 4-8½ g. 84 m. 9 lo. 150 c.
J. M. Ashley, *Gen. Man*.....Ann Arbor, Mich.
H. W. Ashley, *Supt. & Pur. Agt*. do.
C. C. Dodge, *M. M*.....Ann Arbor, Mich.
Toledo, Cin. & St. Louis R. R. 3 g. 465 m. 63 lo. 2,200 c.
E. E. Dwight, *Gen. Man*.....Toledo, O.
F. W. Stewart, *Pur. Agt*.....Toledo, O.
L. James, *Supt. Mach*.....Toledo, O.
Thos. Robertson, *M. M*.....Delphos, O
Toledo Div.: W. N. Moffatt, *Supt.*; and
J. G. Clifford, *M. M*.....Delphos, O.
C. H. Moore, *Gen. M. C. B*.....Delphos, O.
S. E'n & Dayton Div.: D. T. Bacon, *Supt*, Dayton, O.
L. Parisoe, *M. M*.....Dayton, O.
Tonawanda Valley & Cuba and Bradford, Bilfred & Cuba R. Rs. 3g. 19 m. 1 lo. 13 cars.
L. G. Wiggins, *Supt*.....Bradford, Pa.
Toronto, Grey & Bruce Ry. 4-8½ g. 191 m. 20 lo. 460 c.
Edmund Wragge, *Gen. Man*.....Toronto, Can.
W. Watson, *Pur. Agt*.....Toronto, Can.
David Preston, *M. M*.....Toronto, Can.
Troy & Boston R. R. 4-8½ g. 48 m. 20 lo. 484 cars.
D. Robinson, *Pres. & Pur. Agt*.....Troy, N. Y.
Joseph Rush, *Supt*.....Troy, N. Y.
Z. B. Davis, *M. M*.....Troy, N. Y.
R. Y. Coon, *M. C. B*.....Troy, N. Y.
Tuckerton R. R. 4-8½ g. 31 m. 2 lo. 30 cars.
J. J. Pharo, *Supt*.....Tuckerton, N. J.

U

Ulster & Delaware R. R. 4-8½ g. 74 m. 10 lo. 214 cars.
Jas. H. Jones, *Supt*.....Rondout, N. Y.
Joseph Rush, *M. M*.....Rondout, N. Y.
John H. Decker, *M. C. B*.....Rondout, N. Y.
Union Pacific Ry. (5 Gen. Divs.)
3 & 4-8½ g. 4,280 m. 510 lo. 10,550 cars.
S. H. H. Clark, *Gen. Man*.....Omaha, Neb.
Thos. L. Kimball, *Asst. Gen Man*.Omaha, Neb.
M. H. Goble, *Pur. Agt*.....Omaha, Neb.
J. H. Congdon, *S. M. P. & C. D*...Omaha, Neb
John Wilson, *Asst. do*.....Omaha, Neb.
(1) Neb. Div.: F. S. Nichols, *Gen. Supt*.....Omaha, Neb.
E. Div. : C. B. Havens, *Supt*.....Omaha, N. B.
R. McConnell, *M. M*.....Omaha, Neb.
A. M. Collett, *M. C. B*.....Omaha, neb.
St. J. & W. Div.: L. D. Tuthill, *Supt* St. Joseph, Mo.
E. Sleppy, *M. M*.....Gilland, Neb.
Moun. Div.: W. A. Deuel, *Supt*.....Cheyenne, W.T.
J. H. McConnell, *M. M*.....N. Platte, Neb.
H. McDougall, *M. M*.....Cheyenne, W. T.
(2) Wy. Div.: E. Dickenson, *Gen. Supt*.. Laramie, W. T.
Laramie Div.: E. Dickenson, *Gen. Supt*. do.
T. E. Lewis, *M. M*.....Laramie, W. T.
T. A. Davis, *M. M*.....Rawlins, W. T.
Wes. Div.: C. E. Wurtelle, *Supt*. Evanston, W. T.
Geo. F. Chapman, *M. M*.....Evanston, W. T.
(3) Idaho Div.: W. B. Doddridge, *Gen. Supt*. Ogden, U. Og. S. L. Div.:
R. Blickensderfer, *Supt*.....Pocatello, Id.
W. H. Lewis, *M. M*.....Montpellier, Id.
S. L. & W. Div.:
W. S. Ritter, *Supt*.....S. Lake City, Utah.
U. & N. Div.:
R. Blickensdorfer, *Supt*.....Pocatello, Id.
R. Croft, *M. M*.....Logan, Utah.
F. Reardon, *M. M*.....Eagle Rock, Id.
(4) Col. Cent. Div.: A. A. Egbert, *Gen. Supt*. Denver, Col.
C. D. Div.: T. Tonghy, *Supt*.....Denver, Col.
F. Meirtsheimer, *M. M*.....Denver, Col.
So. Park Div.: G. W. Evans, *A. Supt*. Como, Col.
F. Meirsheimer, *M. M*.....Denver, Col.
(5) Kan. Div.: F. T. Smith, *G. Supt*..Kansas City, Mo.
K. Val. Div.: J. O. Brinkerhoff, *Supt*. Kan. C'y, Mo.
Jas. Rickenbaugh, *M. M*.....Armstrong, Kan.
Kan. Cent. Div.:
N. T. Kelley, *Supt*.....Leavenworth, Kan.
Smo. Hill Div.:
O. H. Dorance, *Supt*.....Wallace, Kan.
J. B. Dailey, *M. M*.....Ellis, Kan.
United States Rolling Stock Co.....23 in. Kan. City, Mo.
A. Hegewisch, *Pres*.....New York, N. Y.
C. F. Jauriet, *Gen. M. M*.....Chicago, Ill.
W. H. Chadlock, *Pur. Agt*.....Chicago, Ill.
Utah Central Ry. 4-8½ g. 280 m.
John Sharp, *Gen. Supt*...Salt Lake City, Utah.
Sam'l Reese, *M. M*.....Logan, Utah.
W. B. Armstrong, *M. M*...Salt Lake City, Utah.
Peter Reid, *M. C. B*.....Salt Lake City, Utah.
Utah & Nevada Ry. 4-8½ g. 81 m. Elmira, N. Y.
W. W. Kitter, *Gen. Man*...Salt Lake City, Utah.
Robert Anderson, *M. M*...Salt Lake City, Utah.
Utah & Pleasant Valley Ry. 3 g. 8 m. Elmira, N. Y.
G. M. Young, *Man*.....Salt Lake City, Utah.
Utica, Ithaca & Elmira Ry. 4-8½ g. 120 m. 11 lo. 152 c.
C. R. Fitch, *Supt*.....Elmira, N. Y.
C. J. Howe, *M. M. & M. C. B*...Breesport, N. Y.
Utica & Black Riv. R. R. 4-8½ g. 180 m. 22 lo. 329 c.
J. F. Shepard, *Gen. Supt. & P. A*...Utica, N. Y.
John Bailey, *M. M*.....Utica, N. Y.
David James, *M. C. B*.....Uica. N. Y.

V

Vaca Vall. & Clear Lake R. R. 4-8½ g. 30 m. 2 lo. 19 c.,
G. B. Stevenson, *Gen. Supt*.....Vacaville, Cal.
Valley Ry. 4-8½ g. 59 m. 10 lo. 317 cars.
J. E. Turk, *Supt. & P. Agt*.....Cleveland, O.
Chas. Pritchard, *M. C. B*.....Cleveland, O.
Vernon, Greenburg & Rushville R. R. 25 m.
Horace Scott, *V.-Pres*.....Greensburg, Ind.
Virginia Midland Ry. (*See Rich. & Dan.*)
Virginia & Truckee R. R. 4-8½ g. 54 m. 17 lo. 375 c.
Carson & Colorado R. R. 3 g. 158 m. 4 lo. 76 c.
H. M. Yerington, *Gen. Supt*.....Carson, Nev.
R. J. Laws, *Supt.* (C. & Col.).....Carson, Nev.
C. P. Mason, *Pur. Agt*.....Carson, Nev.
I. N. Fleming, *M. M*.....Carson, Nev.
B. F. Lyon, *M. C. B*.....Carson, Nev.

W

Wabash, Chester & W'n R. R. 4-8½ g. 42 m. 2 lo. 32 c
J. L. Hinckley, *Gen. Supt*.....Chester, Ill
Wabash, St. L. & Pacific Ry. .....(3 Gen. Divs.)
4-8½ g. 3,241 m. 598 lo. 17,230 cars.
John C. Gault, *2d V. P*.....St. Louis, Mo.
Robert Andrews, *Gen. Supt*.....St. Louis, Mo.
R. B. Lyle, *Pur. Agt*.....St. Louis, Mo.
Jacob Jobann, *Gen. M. M*.....Springfield, Ill.
U. H. Rosher, *Gen. C. B*.....Decatur, Ill.
(1) Eas'n Div.: J. B. Barnes, *M. M*. Fort Wayne, Ind.
Oh. & Ind. Div.: G. W. Stevens, *Supt*. Ft. Wayne, Ind.
Peru Div.: C. Murphy, *Supt*.....Peru, Ind.
John McKenna, *M. M*.....Peru, Ind.
Cairo Div.: D. G. Moore, *Supt*.....Cairo, Ill
W. S. Morris, *M. M*.....Cairni, Ill
(2) Middle Div.: R. M. Hemphill, *M. C. B*. Peoria, Ill
Ill. Div.: H. F. Clark, *Supt*.....Springfield, Ill.
H. Rosher, *Gen. C. B*.....Decatur, Ill.
Chicago Div.: E. N. Armstrong, *Supt*. Chicago, Ill.
Peoria Div.: F. L. Tomkins, *Supt*.....Peoria, Ill
Rant'l Div.: B. F. Mathias, *Supt*.....Rantoul, Ill.
J. McCarthy, *M. M*.....Rantoul, Ill.
(3) Western Div.: W. H. Selby, *M. M*.....Moberly, Mo.
C. S. Buck, *M. C. B*.....Moberly, Mo
Missouri Div.: R. S. Miner, *Supt*.....Moberly, Mo
C. B. & O. Div.: J. W. Blanchard, *Supt.*; and
J. S. Hazen, *M. C. B*.....Stanberry, Mo
Quincy Div.: F. D. Schermerhorn, *S.*..Quincy, Ill
Iowa Div.: E. Dresser, *Supt*.....Keokuk, Ia
D. Moln. Div.: H. B. Skeele, *Supt*, Des Moines, Ia
Walla Walla & Columbia Riv. R. R. (*See Or. Ry*
Walkill Ry. (*See N. Y., West, Sh. & B.*
Washington & Western R. R. 4-8½ g. 62 m. 5 lo. 83 c.
H. McLean, *Gen. Supt*.....Alexandria, Va.
Edward Dunn, *M. M*.....Alexandria, Va.
John Harrison, *M. C. B*.....Alexandria, Va.
Waynesburg & Washington Rd.. 3 g. 29 m. 3 lo. 26 c.
C. E. Bower, *Supt*.....Waynesburg, Pa.
A. M. Kline, *M. C. B*.....Waynesburg, Pa
Welland Ry. 4-8½ g. 25 m. 5 lo. 147 cars.
William Pay, *Supt*.....St. Catharines, Ont.
Jas. Pay, *Gen. Man*.....St. Catharines, Ont.
Wm. H. Pay, *M. C. B*.....St. Catharines, Ont.
West End Narrow Gauge Ry. 3 g. 16 m.
Rolla Wells, *Supt*.....St. Louis, Mo.
M. M. Hodgman, *M. M*.....Florissant, Mo.
West Florida R. R. 4-8½ g. 27 m. 2 lo. 22 cars.
J. B. Metcalfe, *Pr. & Gen. Supt*. Bayou Sara, La.
J. A. Tilton, *M. M. & C. B*.....Bayou Sara, La.
West Virginia, Central & Pitsb'g Ry. 13 m. 3 lo. 19 c.
W. B. Leeper, *Gen. Supt*.....Piedmont, W. Va.
W. T. Blackiston, *Pur. Agt*....Piedmont, W. Va.
E. W. Lippencott, *M. M. & M. C. B*. Piedmont.
Western R. R. of Ala. 5 g. 88 m. 15 lo. 570 cars.
Atlanta & W. Point Rd. 5 g. 87 m. 14 lo. 209 c.
Cecil Gabbett, *Gen. Man. & Supt*...Mont., Ala.
C. D. Wall, *M. M*.....Montgomery, Ala.
F. M. Wade, *M. C. B*.....Montgomery, Ala.
Western Counties Ry. 4-8½ g. 67 m. 8 lo. 137 cars.
J. Brignell, *Supt*.....Yarmouth, N. S.
Western Maryland R. R. 4-8½ g. 157 m. 16 lo. 394 c.
J. M. Hood, *Pr. & Gen. Man*.....Baltimore, M.l.
R. J. Adair, *Pur. Agt*.....Baltimore, Md.
David Holtz, *Mast. of Mach*..Union Bridge, Md.
J. H. Nussear, *M. C. B*.....Union Bridge, Md.
Western No. Carolina R. R. 3 g. 155 m. 10 lo. 39 c.
V. E. McBee, *Supt*.....Salisbury, N. C.
Jos. P. Minetree, *Pur. Agt*.....Richmond, Va.
G. W. Gates, *M. M*.....Salisbury, N. C.
Western & Atlantic R. R. 5 g. 138 m. 48 lo. 952 c.
R. A. Anderson, *Gen. Supt*.....Atlanta, Ga.
A. B. Bostwick, *Asst. Supt*.....Atlanta, Ga.
W. R. Webster, *Pur. Agt*.....Atlanta, Ga.
John H. Flynn, *M. M. & C. B*.....Atlanta, Ga.
Wheeling & Lake Erie R. R. 108 miles.
M. D. Woodford, *Gen. Man*.....Toledo, O.
O. P. Dunbar, *Gen. M. M*.....Norwalk, O.
John Hillhouse, *Dir. M. M*.....Norwalk, O.
White Water R. R. (*See Ft. W., Cin. & Lou.*)
Wilmington & No'n R. R. 4-8½ g. 77 m. 13 lo. 148 c.
J. H. Thompson, *Supt. & P. A*..Coatesville, Pa.
George Rommel, *M. M*.....Coatesville, Pa.
Alex. Maitland, *M. C. B*.....Coatesville, Pa.
Wilmington & Weldon; Northeastern; S. C. Central; Cheraw & Darlington; Cheraw & Salisbury; and Wilmington, Columbia & Augusta R. Rs.
5 g. 599 miles. 70 locomotives. 1,120 cars.
R. R. Bridgers, *Gen. Man*.....Wilmington, N
J. F. Divine, *Gen. Supt*.....Wilmington, N.
John Bisset, *M. M*.....Wilmington. N. C.
W. H. Day, *M. C. B*.....Florence, S. C.
C. R. Chase, *M. C. B.* (W. & W.).Wilmington, N. C
Windsor & Annapolis Ry. 4-8½ g. 130 m. 10 lo. 156 c.
P. Innes, *Gen. Man*.....Kentville, N. S.
Wm. Yould, *M. M*.....Kentville, N. S.
Wm. Grierson, *M. C. B*.....Kentville, N. S.
Wisconsin Central R. R. 4-8½ g. 480 m. 49 lo. 1,608 c.
F. N. Finney, *Gen. Man*.....Milwaukee, Wis.
E. K. Howes, *Pur. Agt*.....Milwaukee, Wis.
W. A. Short, *Supt. M. P. & M*...Stevens Pt, Wis.
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G. W. Hurlburt, *Supt*.....Worcester, Mass.
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Worcester & Shrewsbury R. R. 3 g. 3 miles.
Worcester & Somerset R. R. 4-8½ g. 10 m. 1 lo. 4 c.
J. J. Coburn, *Supt*.....Worcester, Mass.
G. E. Hapgood, *Pur. Agt*.....Worcester, Mass.
Chas. Cleveland, *M. M*.....Worcester, Mass.

Y

York & Peach Bottom Ry. 3 g. 39 m. 4 lo. 62 c.
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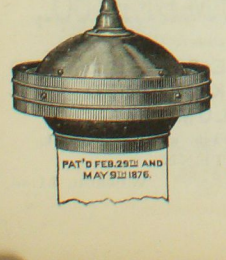

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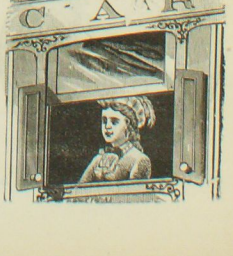

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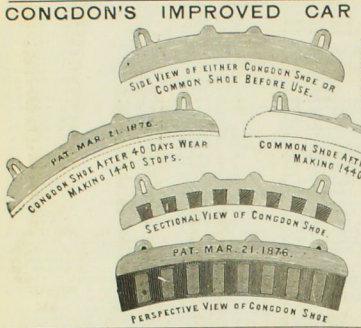

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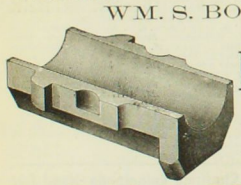

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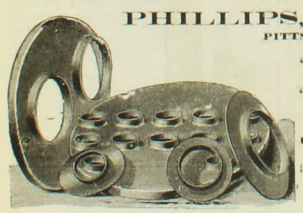

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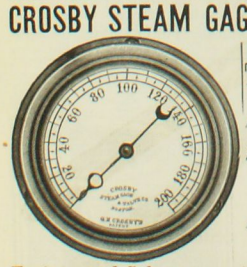

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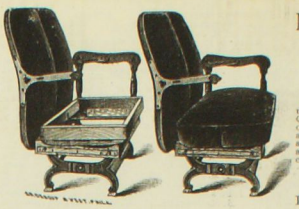

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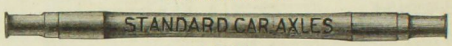

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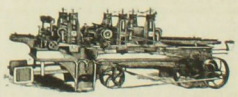

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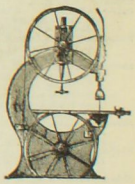

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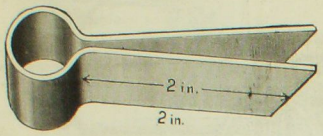

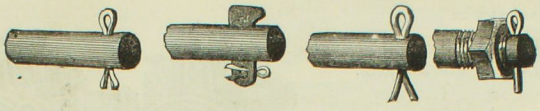

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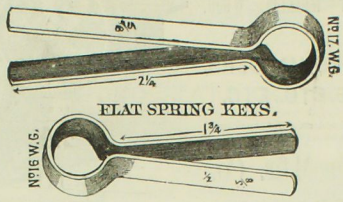

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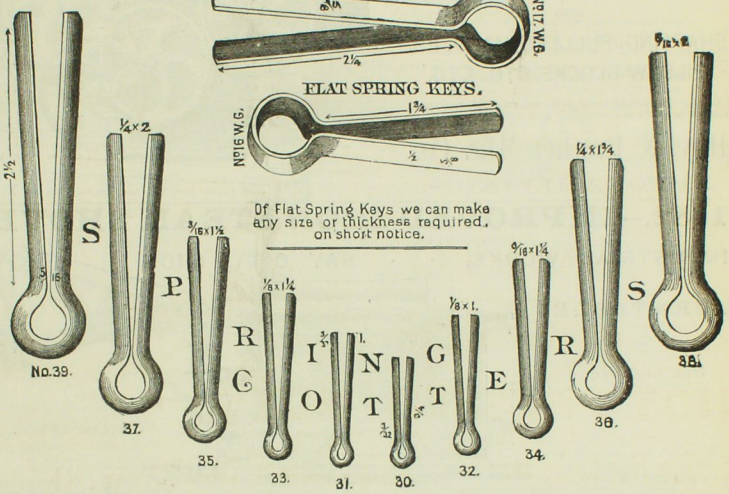

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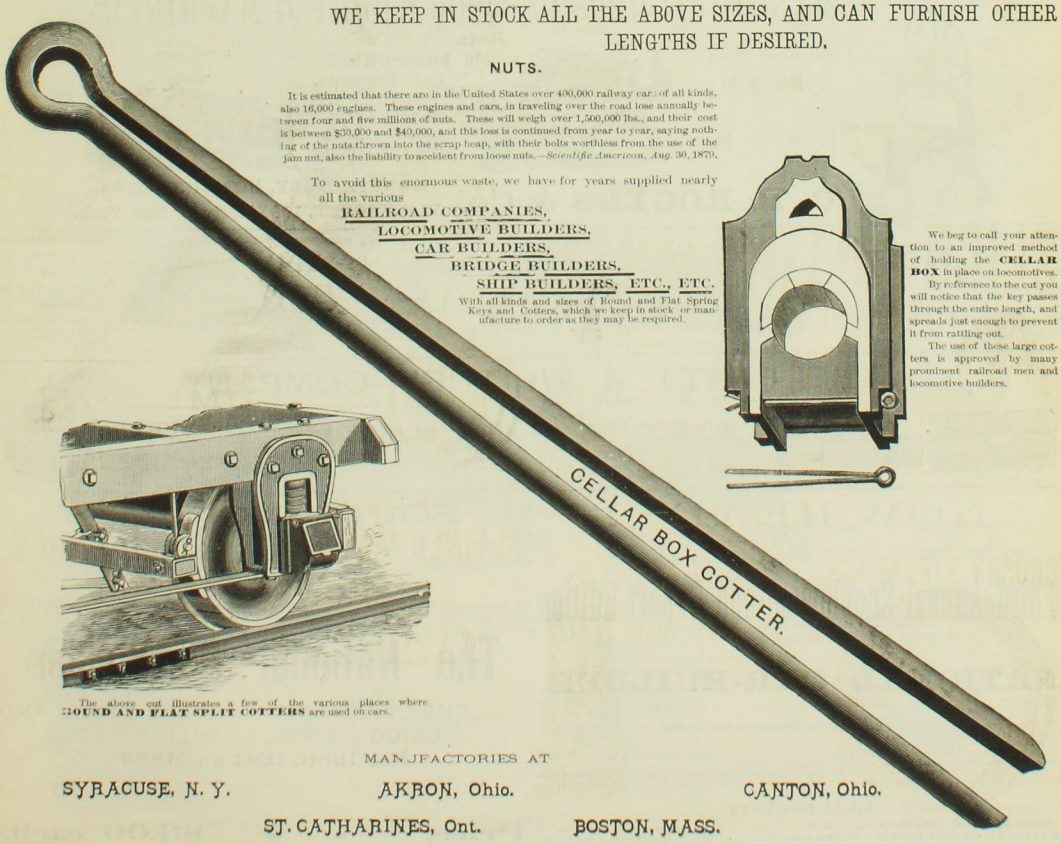

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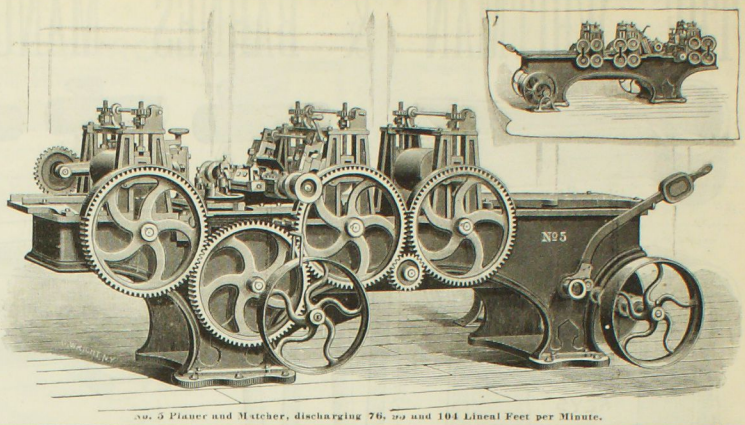

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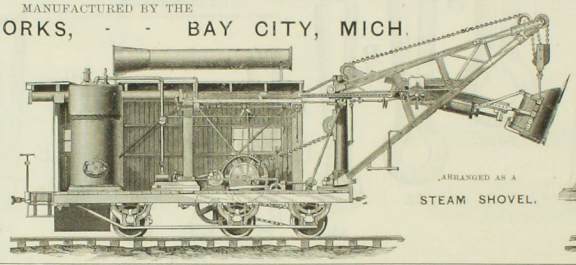

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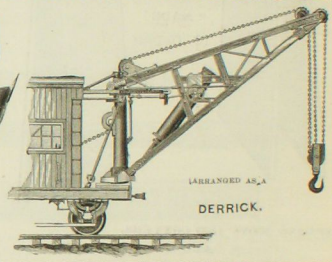
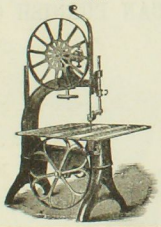


ARRANGED AS A DERRICK.

BAND SAW.



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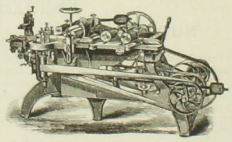

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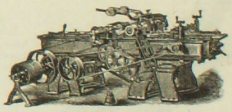

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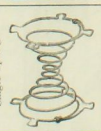

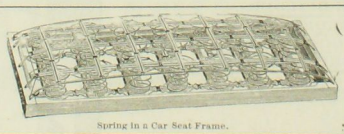

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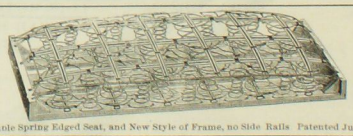

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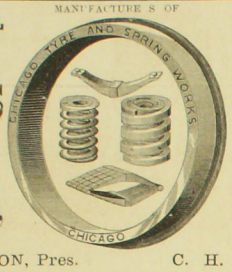

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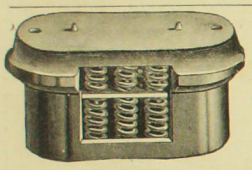

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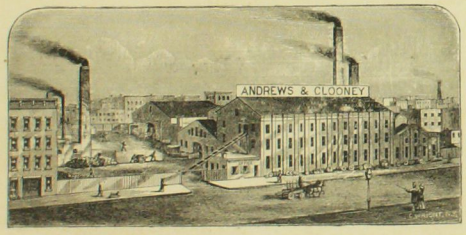

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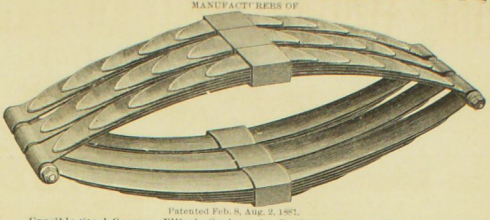

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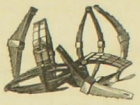

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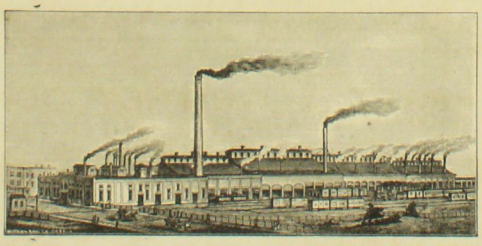

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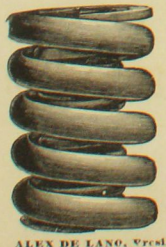

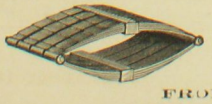

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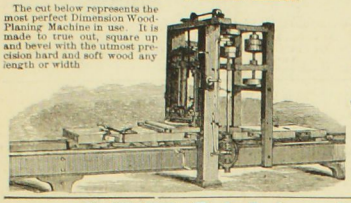

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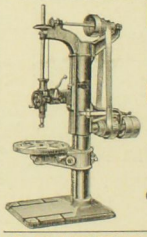

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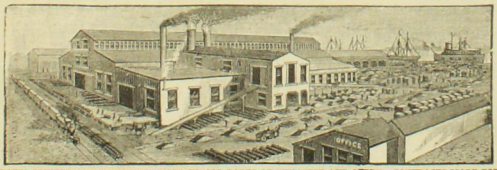

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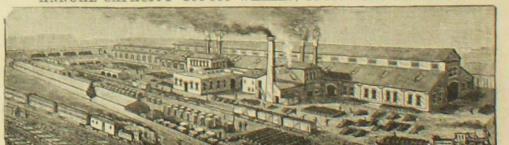

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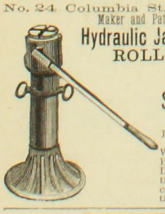

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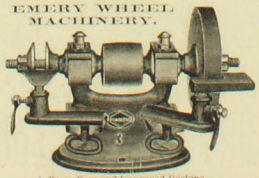

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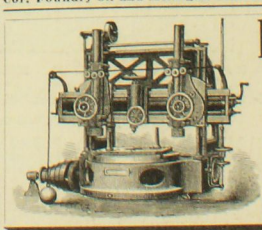

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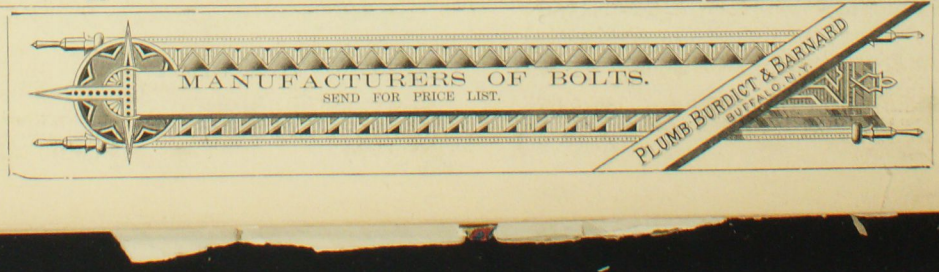
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